The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

Published Every Thursday TULSA, OKLAHOMA, JANUARY 5, 1928 $6.00 a Year

Pipe Stills

• • • • We will finance "turn-key" installations of Graver Pipe Stills under unconditional operating guarantees.

~ REFINERY DIVISION ~

GRAVER Corporation

Founded 1857

844 Rush Street ~ Chicago

NEW YORK TULSA FORT WORTH LOS ANGELES

Plant — East Chicago, Indiana

Advertisers' Index on Page 25 Table of Contents on Page 26

Allegheny
STEEL PIPE

HIGHEST QUALITY PAST TWO DECADES

1901 ⟷ 1927

LINE PIPE
THREADED AND COUPLED

ALSO PLAIN ENDS FITTED FOR WELDING
OR PATENT COUPLINGS.

TUBING · CASING

A. P. I. Specifications

ALLEGHENY STEEL CO. *General Offices and Works:* BRACKENRIDGE, PA.—NEW YORK · CHICAGO · DETROIT · MILWAUKEE · TULSA

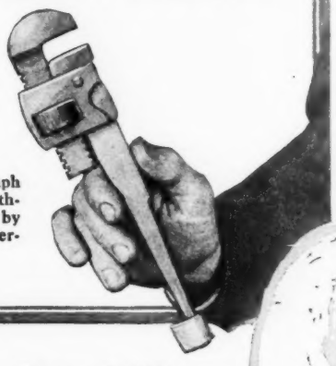
Allegheny Steel

Sheets for Automobile Bodies Metallic Furniture Deep Draws Ascoloy Electrical Sheets Sheet Castings Boiler Tubes Pipe

anuar

The Oil

Here's the U.S. Patent Office's model of Dan Stillson's wrench



From a photograph taken at the Smithsonian Institution by Underwood & Underwood.

DAN STILLSON

Steamboat mechanic in the Civil War.

Master craftsman for Walworth.

Inventor of the STILLSON wrench.

Retired on his royalties.

Invented by Dan Stillson In the Walworth Plant .... and Made There *Ever Since*

DAN STILLSON was an expert mechanic in the Walworth factory when he invented the wrench that has since become the most famous and the most frequently copied tool in the world. Walworth sent him to Washington to get his original patents and bought the manufacturing rights from him.

Dan's first STILLSON is now a museum exhibit in the Smithsonian Institution but the Walworth plant has been the birthplace of all its millions of direct descendants for 58 years.

Look for Dan Stillson's own mark . . . STILLSON . . . in a diamond on the top jaw of any wrench you buy. If Walworth made it, you'll find it. It's the mark of the genuine

WALWORTH
STILLSON

WALWORTH COMPANY
51 East 42nd Street, New York
Distributors in Principal Cities of the World
Walworth Limited, 10 Cathcart St., Montreal, P. Q.

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879

USED BY
Gulf Pipe Line Co.
Humble Oil & Refining Co.
Phillips Petroleum Co. and others.

For SIX Years

. . . The problem of automatically collecting and disposing of dust and dirt has been solved in the Oil Fields, at Refineries, Pumping Stations, and on Trucks, Tractors, etc., by the simple installation of the

UNITED AIR CLEANER

Never needs emptying—never needs adjustments—never clogs—has no screens or felts to clean or replace.

Inquiries invited. Write for Free Descriptive Catalog.

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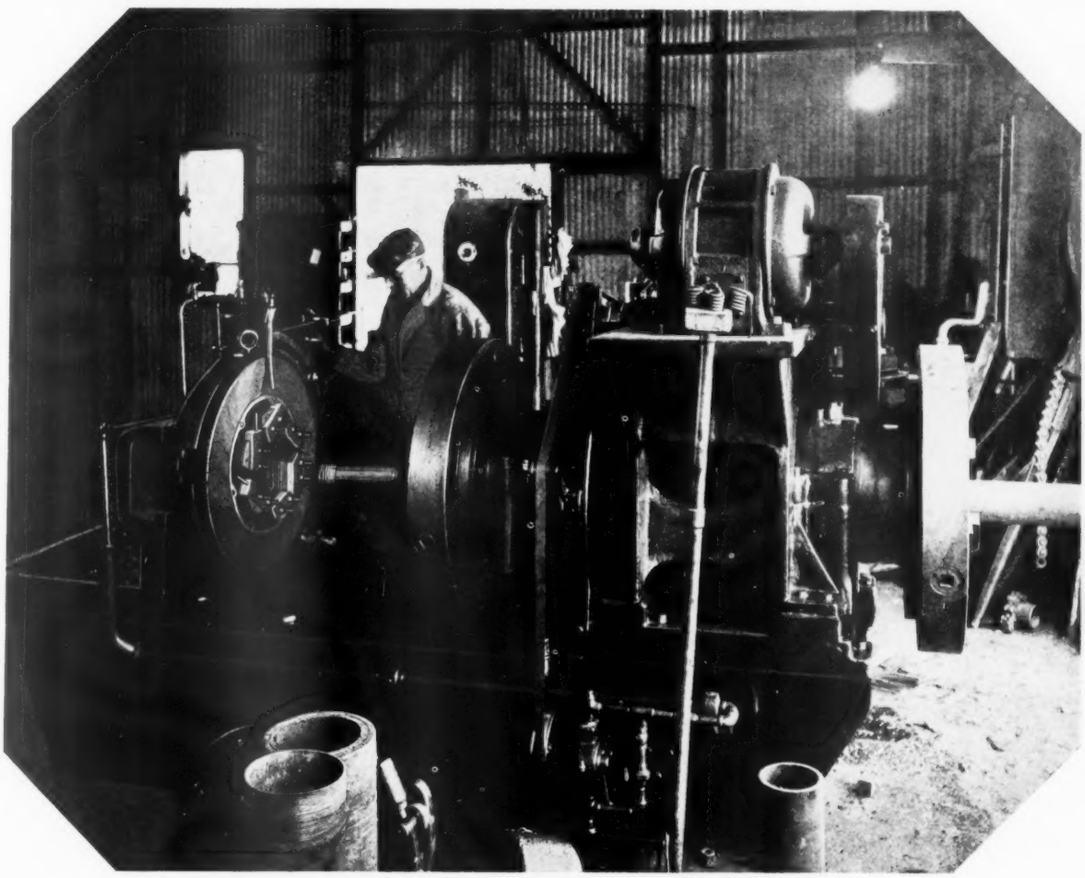


YOU CAN'T PASS THE BUCK IN THE OIL FIELDS

Threads on pipe and casing must be right in the oil fields. The form of thread must be good and the taper correct its full length. Hundreds of dollars worth of casing and much valuable time depends upon good threads, so bad threads are not tolerated.

The threads on pipe and casing can only be as good as the pipe machine that produces them. That is the answer for the universal use of LANDIS Pipe Threading and Cutting Off Machines in the Oil Fields.

Landis Pipe Machines are good. They produce accurate, well formed threads. They are as satisfactory for rethreading old casing and drill pipe as for new pipe. Ask the Norphlet Machinery & Supply Company, Norphlet, Ark. They will tell you that the Landis has made them money and saved them trouble.

Rigid in design and powerful in construction, and LANDIS Pipe Machines give years of hard service without repairs.

Distinctive in design the Landis Chaser insures good threads regardless of the material being threaded. The long life and the simple grinding features make threading profitable.

Write for complete information regarding Landis Threading Equipment.

LANDIS TRADE — MARK

LANDIS MACHINE COMPANY

Waynesboro, Pa.

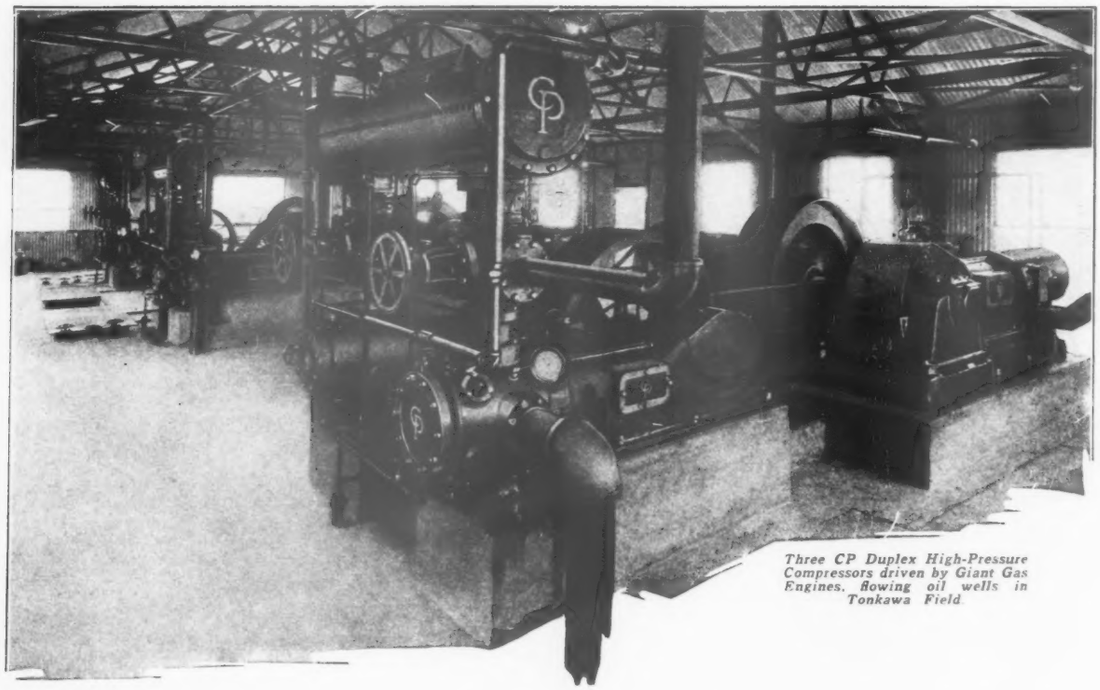
LANDIS TRADE — MARK

Detroit Office: 5928 Second Blvd.

DOMESTIC AGENTS: Marshall & Huschart Machinery Co., Chicago, Ill.; Marshall & Huschart Machinery Co. of Indiana, Indianapolis, Ind.; Colcord-Wright Machinery & Supply Co., St. Louis, Mo.; R. B. Whitacre & Co., St. Paul, Minn.; Hamilton Machinery Co., Chattanooga, Tenn.; Young & Vann Supply Co., Birmingham, Ala.; Woodward, Wight & Co., New Orleans, La.; Shreveport, La.; Tampa, Fla.; Jos. T. Ryerson & Son, Houston, Texas; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.; Salt Lake Hardware Co., Salt Lake City, Utah; Harry M. Euler Co., Portland, Ore.; Hallidie Machy Co., Seattle, Wash.; Hallidie Co., Spokane, Wash.; Herberts Machinery & Supply Co., San Francisco and Los Angeles, Calif.; R. S. Armstrong & Bro. Co., Atlanta, Ga.

CANADIAN AGENTS: Canadian Fairbanks-Morse Co., Toronto and Montreal.

FOREIGN REPRESENTATIVES: Benson Brothers, Ltd., Sydney; Schuchardt & Schutte, Berlin, Vienna, Prague; R. S. Stokvis & Zonen, Rotterdam, Brussels; M. Almeida & Cia, Sao Paulo, Rio de Janeiro; Alfred Herbert, Ltd., Coventry, Calcutta, Osaka; Burton Fils, Paris; D. Drury & Co., Johannesburg; Akt. C. A. Herstad, Copenhagen; Ing. Ercole Vaghi, Milan; Allied Machinery Co., Barcelona, Zurich; Akt. Axel Christiernsson, Stockholm.



Three CP Duplex High-Pressure Compressors driven by Giant Gas Engines, flowing oil wells in Tonkawa Field.

CP Compressors, Oil and Gas Engines For Oil Field Service

OIL-FIELD EQUIPMENT:

- Compressors for flowing of wells,
- Vacuum pumps, condensers and Compressors for refinery service,
- Gas Compressors for pressure boosting,
- Diesel engines 80 to 450 h.p.
- Gas engines 90 to 270 h.p.
- Portable Oil and Gasoline Engine-powered Air Compressors for cleaning wells and tank farm work.
- Pneumatic Riveters, Chippers, Caulkers, Scalers, Drills, Reamers and Grinders to handle every portable tool job.

You can secure a CP Compressor to meet any oil-field requirement. There are more than 500 types and sizes, all thoroughly proven, for operation by oil and gas engines, belt or electric motor, in stationary, portable or semi-portable units.

Out of the fog of claims and counter-claims, the fact is, that in a list of installations recently appearing in one of the leading Oil Trade Journals covering the Seminole Field, there were practically as many CP units as all other makes combined.

If you have wells to flow, tanks to erect, pipe lines to lay, refineries or extraction plants to equip, let our oil-field engineers confer with you—they have had a wide experience in all branches of the industry.

J-284

Chicago Pneumatic Tool Co.

6 East 44th Street, NEW YORK, N. Y.

Whealton & Townsend, Inc., *Authorized Distributors*

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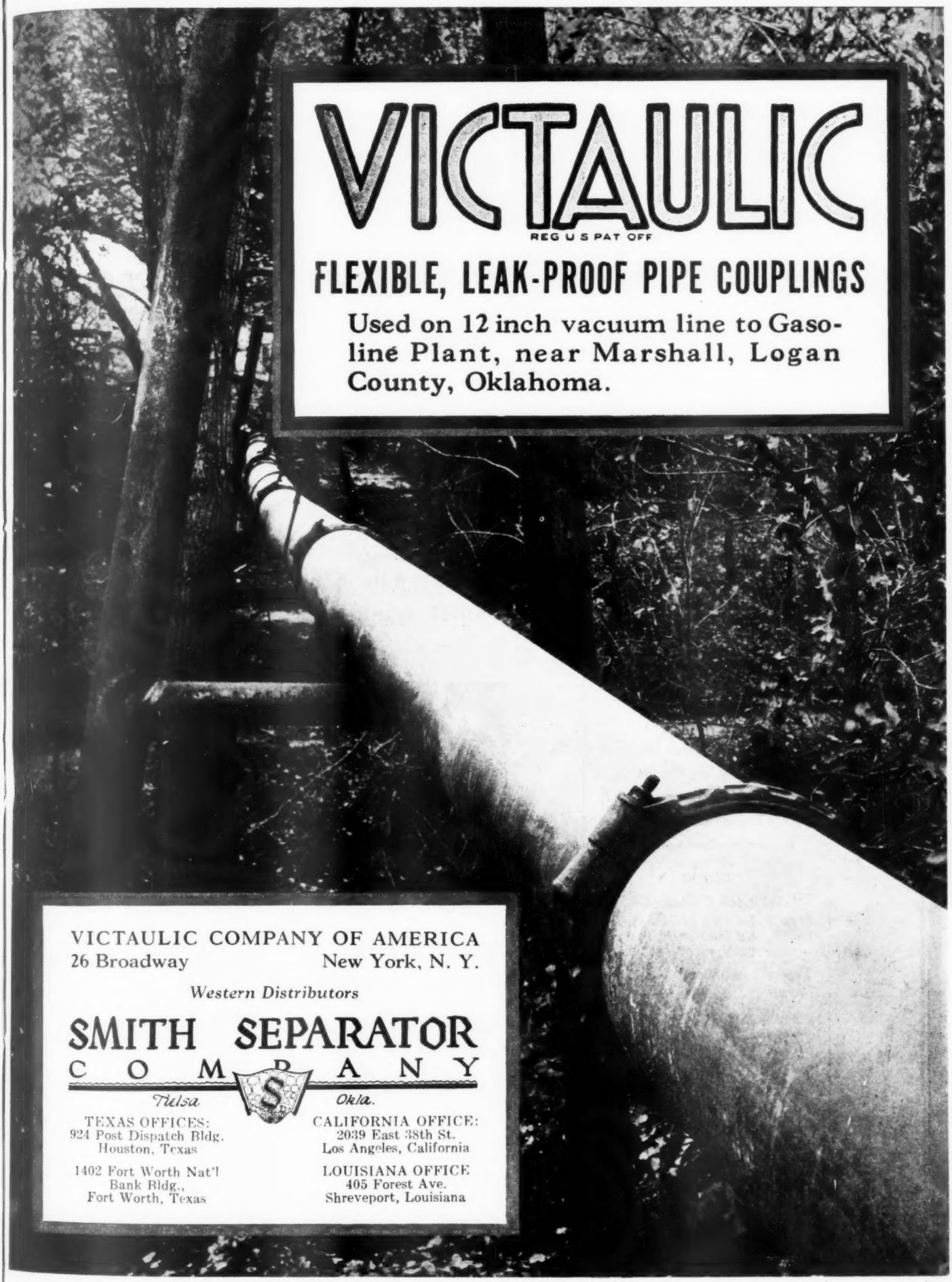
210 So. Jefferson St., Dallas
120 East Brady St., Tulsa
1415 Fannin St., Houston


VICTAULIC
REG U S PAT OFF
FLEXIBLE, LEAK-PROOF PIPE COUPLINGS
Used on 12 inch vacuum line to Gasoline Plant, near Marshall, Logan County, Oklahoma.
VICTAULIC COMPANY OF AMERICA
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DONOVAN

Axelson Machine Co.
Sucker Rods, Pull Rods, Plunger Working Barrels (Pumps, Etc.)

Beaumont Iron Works Co.
Dreadnaught Rotary Equipment, Water-Cooled Draw Works, Pumping Hoists, Traveling Blocks, Etc.

Carbic Manufacturing Co.
Acetylene Gas Generators and Welding Equipment

Donovan Boiler Works
Oil Country Boilers and Tanks

Frick-Reid Service Belting
Rubber Covered and Friction Surface

Jensen Bros. Mfg. Co.
Pumping Jacks

National Transit Pump and Machine Co.
Power and Steam Pumps

J. P. Ratigan
Grips, Clamps, Beam Hangers

Joseph Reid Gas Engine Co.
Gas and Oil Engines, two and four-cycle, Band Wheel and Direct Drive Pumping Powers

Rossendale-Reddaway Co.
"Camel Hair" Belting, Belt Clamps

Whitlock Cordage Co.
Manila Cordage, Including Frick-Reid Manila Bull Ropes —same quality for ten years.

Lapweld and Seamless Tubular Goods

Walworth Company
Valves, Fittings and Tools for Steam, Water, Gas, Oil and Air.

Engineering Crews
For the installation of Pumping Powers and related equipment.

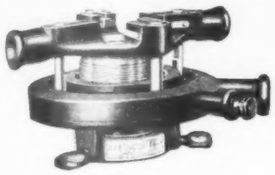
Donovan was the first to build a code boiler with the dome over the firebox.

Slowing down a gang of tool pushers to wait for steam is a thing unknown on a rig with a Donovan.

Only a user understands how rapidly a little fuel can make a lot of steam.

FRICK REID SUPPLY COMPANY

Tulsa, Okla. Pittsburgh, Pa.
West of the Mississippi, Stores Everywhere
East of the Mississippi, The Frick & Lindsay Co.



The No. 1A is the same as the No. 1 except that it is equipped with a ratchet for work where space is restricted.

No. 1A Nye Receding Pipe Threader, complete ..... $12.00 net
West of Rocky Mountains $13.50

A LETTER FROM HARRY G. NYE

TO THE OIL MEN OF THE U. S. A.

Fellow Citizens:

As I said in some recent letters, some men are natural-born musicians. Some fellows are natural-born orators. Some others are natural-born—well, a lot of things. My musical ability is confined to eating corn on the cob, and my oratorical ability to talking to a traffic cop, at both of which I am pretty good. So wouldn't I be a sucker to buy a bass drum, when I can't blow a note, or to run for office and make a lot of enemies by telling the truth, as is my custom?

We are all cut out for something in this world, and the big mistake we make is when a pair of pants thinks it is a brocaded vest, or the other way around. There is many a party gown that would have made a beautiful bathing-suit. And so we are all cut out for something; and, if we fail, it may not be the fault of the Tailor, or perhaps even of the material.

Not very many boys turned out to be what their mothers wanted them to be. God bless the mothers, say I, but even mothers make mistakes, or at least raise them wrong. Many a mother has tried to make a clerical collar out of a bartender's apron, or a pair of overalls out of a pink shirt. But, if a boy has a talent for driving a taxicab, and doesn't want to be a soldier, then there is no use raising your boy to be a soldier. Get him a cab and he will be just as dangerous.

I think likely that my mother, who was the best mother in the world except possibly yours, had a hankering, like most mothers, for me to be a preacher. Except for the fact that I can't speak, and can't sing, and have some trouble with the ten commandments, I would have made a good one. Most of our big league pitchers were sent to college to study law. Don't be discouraged if your boy is poor at mathematics. Many a boy who is poor at algebra is rich at fifty.

We are all cut out for something, like so many pieces of pipe, and I don't need to tell an oil man that the place to put a piece of pipe is where it belongs. I know how it was with me. While my mother was trying to make me a preacher my father was making me a farmer. I know about as much about farming as a member of the agricultural committee of the Senate. Then one day I found out what I was intended for, if anything.

For twenty years now I have been making pipe-tools, and making them better every year. That's all I know and all I'm good for. I never preached a sermon, but I have prevented more profanity among oil men than all the preachers in America. I don't know anything about making butter, but I make pipe-dies that thread iron pipe as though that was what it was.

Yours for service,

HARRY G. NYE.

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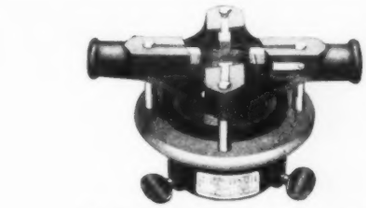
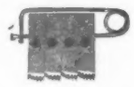
Otherwise Known as
THE NYE TOOL & MACHINE WORKS
4120-30 Fullerton Ave., Chicago, Ill.



The rugged construction and few working parts account for the simplicity and durability of these Nye Receding models. They do the work easily and efficiently.

No. 1 Nye Receding Pipe Threader, complete ..... $9.60 net
West of Rocky Mountains $10.80

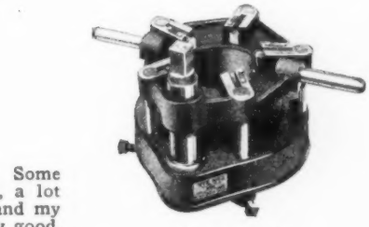


Nye Chasers

Fit Nos. 1-1A and 2 Nye Receding Die Stocks

Each set is guaranteed in every particular. Will cut much easier than other similar dies.

No. 1, 1" to 1⅛" ..... $ .75 per set net
No. 1, 2" ..... 1.25 per set net
No. 2, 2⅛" to 4" ..... 3.60 per set net



Nye No. 2 Geared Threading Device

Improved

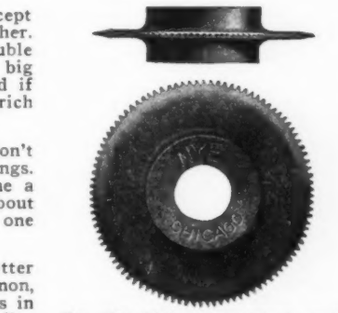
Capacity 2⅛ in. to 4 in. inclusive. This tool has the same rugged construction as the No. 1 and No. 1A Nye Receding Stocks. A ratchet handle and a spider hub threaded for 1-inch pipe is furnished as standard equipment.

Net price complete $50.00
West of Rocky Mountains 55.00

FREE TRIAL—ABSOLUTELY GUARANTEED

Nye Bit Brace Reamer

Reams from ⅛ to 1¼ inches inclusive.
NET PRICE $1.17
ABSOLUTELY GUARANTEED



Nye thin blade cutter wheel, made to fit all standard makes of pipe cutters, and guaranteed against breakage in use. Made both in smooth and knurled edge.

Nye Saunders Pipe Cutters

No. 1	$ 1.80 net
No. 2	2.70 "
No. 3	6.60 "
No. 4	10.80 "
No. 5	16.80 "

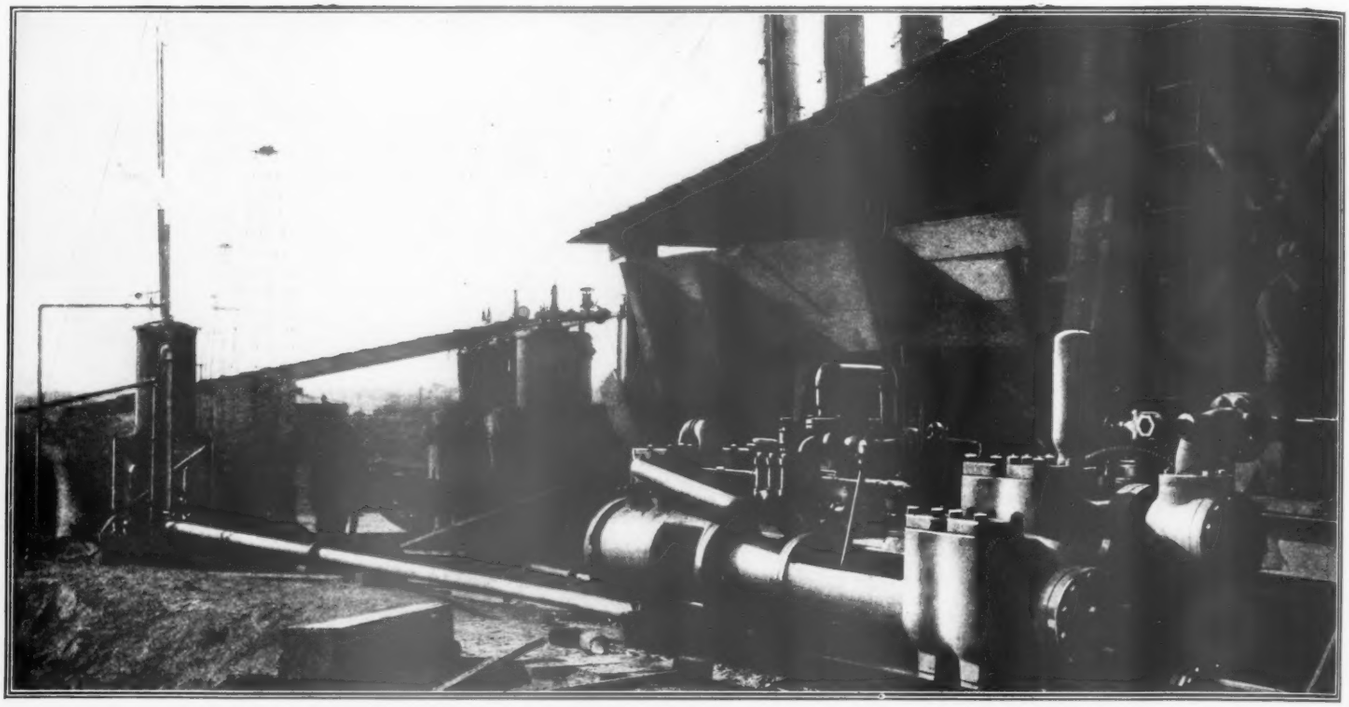
Nye Drop Forged Pipe Cutter

No. 1-A ⅛ to ¾"	$2.25 net
No. 2-A ¾ to 2"	3.00 net
No. 3-A 1 to 3"	5.00 net

Nye Barnes Pipe Cutters

No. 1	$ 2.25 net
No. 2	3.00 "
No. 3	5.00 "
No. 4	10.00 "
No. 5	15.00 "
No. 6	20.00 "

WORTHINGTON



12/18 x 7¼ x 18 Worthington Compound Slush Pump with Portable Open Feed Water Heater.
Installation used by Carl B. King Drilling Company, drilling wells at Gypsy Oil Company, Bud Carter Well No. 12, at Earlsboro, Oklahoma.

THE WORTHINGTON LONG STROKE COMPOUND SLUSH PUMP AND PORTABLE FEEDWATER HEATER

are typical of the long list of high efficiency apparatus PIONEERED BY WORTHINGTON for use in the oil fields. By utilizing only the simplest known features of good engineering the system

Saves 40 Per Cent Fuel and Water

This saving is effected by compounding the steam cylinders of the SLUSH PUMP and by recovering in the FEEDWATER HEATER otherwise wasted steam.

WORTHINGTON PUMP & MACHINERY CORPORATION
115 BROADWAY, NEW YORK CITY Branch Offices in 25 U. S. Cities

Worthington Products: PUMPS - - - COMPRESSORS - - - CONDENSERS AND AUXILIARIES
OIL AND GAS ENGINES - - - - - FEEDWATER HEATERS - - - - - WATER AND OIL METERS

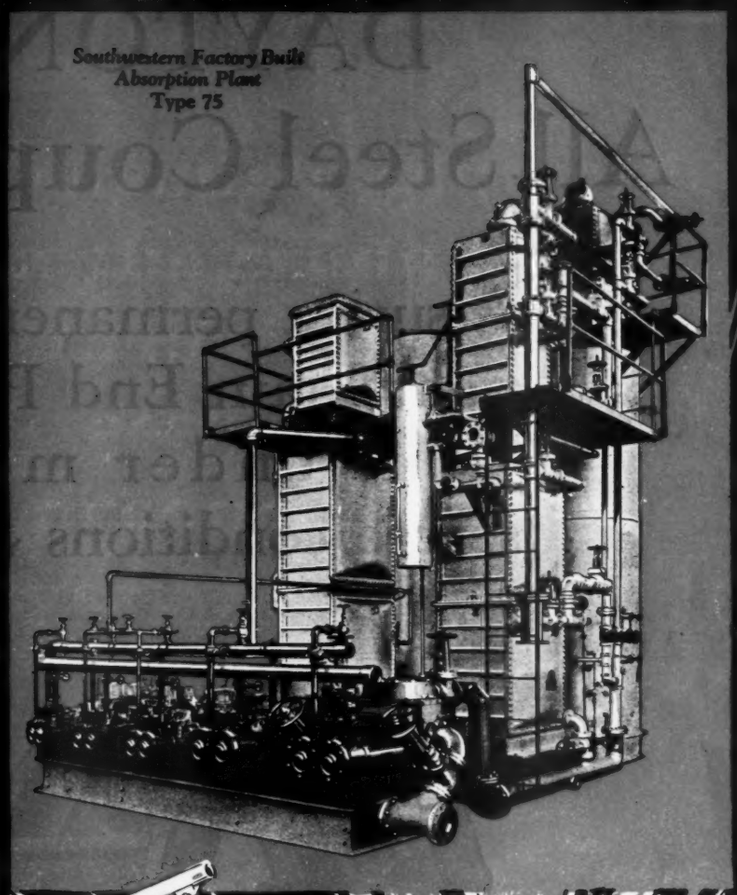
6140-3

Two Famous 75's

The SOUTHWESTERN 75 Absorption Plant of 1927

...helped to win the fight for low gasoline manufacturing costs.

Quick installation, high recoveries and low operating costs are Southwestern Absorption Plant features.



Southwestern Factory Built Absorption Plant Type 75

The French 75 of 1914 helped to win the World War..

SOUTHWESTERN ENGINEERING CORPORATION LOS ANGELES U.S.A.

SOUTHWESTERN ENGINEERING CORP.

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Mayo Bldg., Tulsa, Okla.

DAYTON
All Steel Couplings

Assure a permanently tight Plain End Pipe Joint under most severe conditions

THE DAYTON PIPE COUPLING COMPANY

EMPIRE

Under "chemists control"
from the crude to
your customer's car is the
double assurance of a
quality product that goes
with every Empire sale

Build your business on Empire's reputation for satisfactory petroleum products

CITIES SERVICE OILS

ONCE - ALWAYS

EMPIRE OIL & REFINING COMPANY

SUBSIDIARY CITIES SERVICE CO.

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Atlanta Kansas City St. Louis
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EMCO-
LARGE CAPACITY METERS

"The only interchangeable Gas Meter on the Market!"

In the limelight of popularity among many foresighted gas companies is the exclusive EMCO interchangeability feature which makes it possible to quickly repair or adjust any part of the meter mechanism *without removing the meter from the line.*

The many economical advantages of this EMCO exclusive feature is apparent when you consider the hours of time and labor required to repair other meters and the resulting disruption of service to the customer.

The simplicity of EMCO design and its easy accessibility permits *one man* to change the complete meter mechanism in a few minutes—by simply removing the top cover, lifting out the old mechanism and replacing it with a new one which has previously been tested and adjusted at the shop.

This EMCO feature also makes it practical for gas companies to keep all their EMCO METERS in perfect, shop-tested accuracy from year to year—indefinitely.

·EMCO·

PITTSBURGH EQUITABLE METER COMPANY

PITTSBURGH, PENNA.

BRANCH OFFICES:

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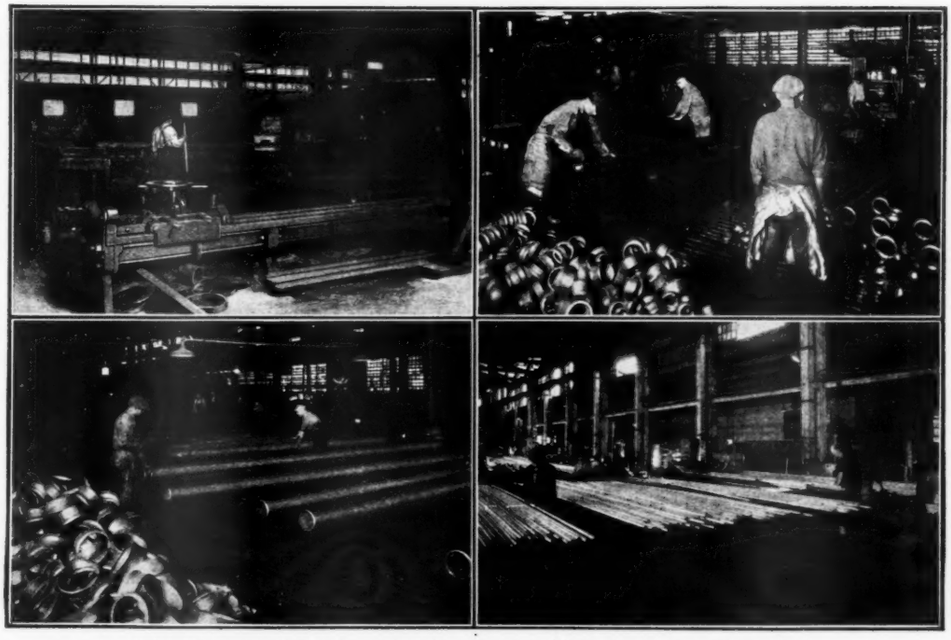
Los Angeles, Calif. Tulsa, Okla. Seattle, Wash.
Columbia, S. C. Kansas City, Mo. Salt Lake City, Utah

MAKING GOOD IN THE FIELD MAKES FRIENDS FOR WHEELING



Wheeling Inspection is thorough. The accuracy of threads on pipe and couplings is systematically checked against working gauges. Each individual threaded end and each coupling is checked and verified with a gauge. No expense has been spared to insure a high standard of perfection for all products.

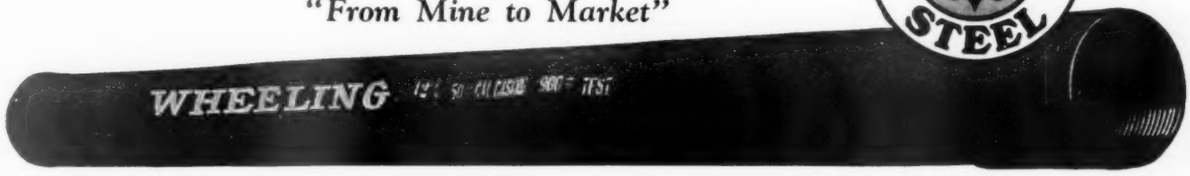
Making Sure That Wheeling "Gets Down to Business"

INSPECTING Wheeling (La Belle) Oil Country Goods is a business in itself—a business of training men to the standards of Wheeling practice—a business of maintaining the most efficient testing equipment, working gauges and other apparatus—a business of providing an adequate organization to insure a high standard of perfection for all product from mine to market. By treating the inspection of its products as a business—a specialized industry in itself—Wheeling gets results that mean dollars to drillers. When Wheeling (La Belle) arrives it means "get down to business"—*freedom from grief!*

WHEELING STEEL CORPORATION, WHEELING, W. VA.

"From Mine to Market"

WHEELING STEEL



WHEELING

CASING · TUBING · LINE PIPE

Powerful~Reliable~Efficient

Prescott-Menominee Pipe Line Pumps are built with a big reserve of power—built to carry high pressures, heavy overloads—to stand up through the grind of continuous day-in and day-out operation.

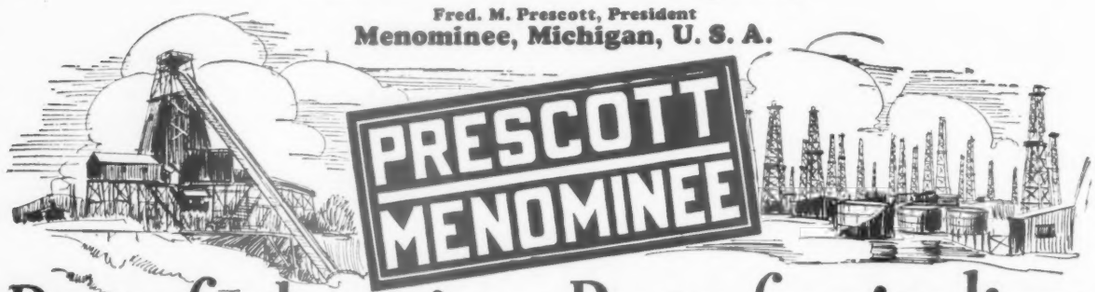
They are dependable. Consistent performance, uninterrupted by costly shut-downs for adjustment or repairs, has made Prescott Pumps the standard of leading engineers in the oil industry.

Prescott-Menominee Pipe Line Pumps operate with unusual economy. They keep delivering, through years of the hardest service, the most barrels per horse power.

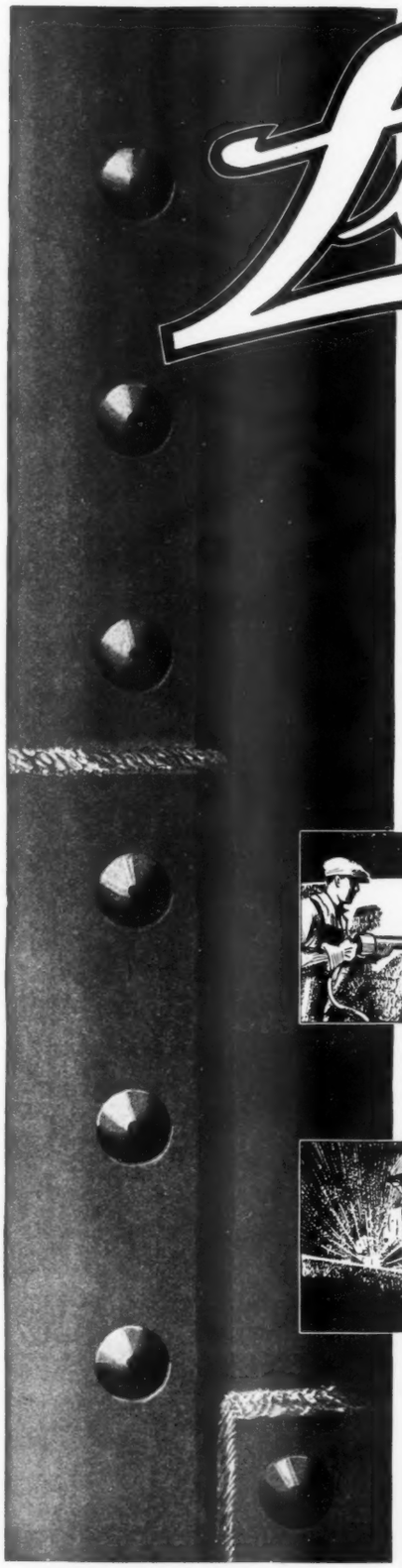
Bulletins and performance data on Prescott-Menominee oil field pumps will be sent on request.

The Prescott Company

Fred. M. Prescott, President
Menominee, Michigan, U. S. A.



Pumps for deep mines~Pumps for pipe lines



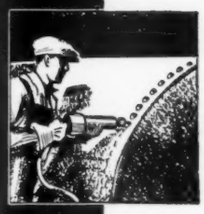
Leader

ORIGINATORS OF

Rivet-Weld CONSTRUCTION

SEVEN years ago LEADER engineers sought and found the answer to the oil man's plea for a tank of rugged strength and absolutely leakproof. They originated RIVET-WELD Construction and guaranteed it to fill the oil man's demand. We do not have to build any other type of tank. RIVET-WELD has proved its worth.

Rivets for Strength



The plates of open hearth steel are driven to a permanent joint with cone head boiler rivets. These rivets are driven into place while hot by a hydraulic rivet machine of 60 to 100 tons pressure. Where strain is greatest more rivets are used, giving strength where strength is demanded.

Weld for Tightness

Using the powerful electric arc weld process, LEADER RIVET-WELD tanks are welded for tightness. (They are riveted for strength.) The arc weld fuses a heavy stream of molten metal with the steel, sealing each joint and assuring absolute tightness.

LEADER'S line of RIVET-WELD tanks of standard sizes are carried in stock. Regardless of your requirements—horizontal, vertical or under ground—we have them and will do the installing if you wish. Write for a copy of Bulletin 102; it will give you detailed information.

LEADER IRON WORKS

2130 No. Jasper Street, DECATUR, ILLINOIS

Now Ready

Wilson Rotary Tong with Rollover Lever

Another advance in Wilson design. The convenient Rollover Lever and Hanging Device that has proved so successful in Wilson Casing Tongs now is embodied in Wilson Rotary Tongs. Permits reversal of Tong within 10 seconds without laying Tong on floor.

Carried in stock by your Supply Companies

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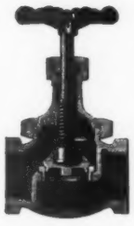
Preventing Wasteful Leakage in the Oil Industry

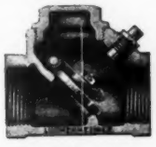
Iron Body
Bronze Mounted
"Clip" Gate Valve

Bronze
Wedge Disc
Gate Valve

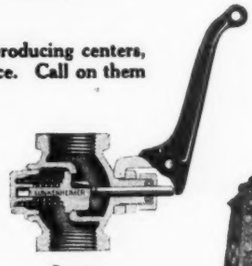


Bronze "Renewo"
Globe Valve
Renewable
Nickel Seat and Disc

Iron Body "Ferrenewo"
Check Valve
Renewable
Nickel Seat and Disc

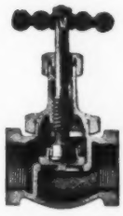


Bronze Regrinding
Swing Check Valve
Renewable Bronze Disc

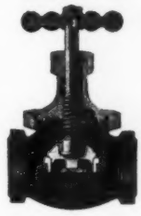


Bronze
Regrinding
Lever Operated Valve

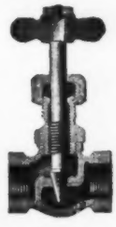
Bronze
Double Disc
Gate Valve



Bronze Regrinding
Globe Valve
Renewable Bronze Disc



Iron Body "Ferrenewo"
Globe Valve
Renewable
Nickel Seat and Disc



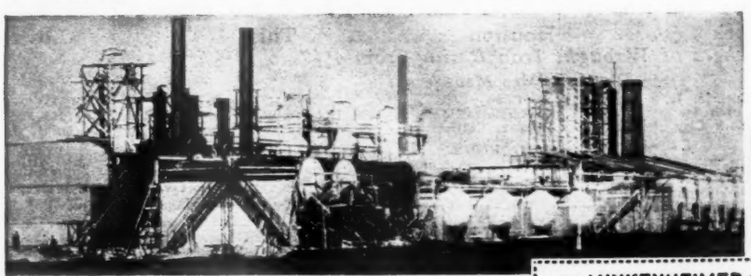
Bronze
Needle Valve
Bronze or
Steel Stem

In the oil producing fields and in the refineries you will find Lunkenheimer Valves among the preferred equipment, because they are important factors in reducing operating costs. Positive seat tightness prevents wasteful leakage; freedom from frequent delays for repairs and replacements insures continuous satisfactory service with minimum maintenance expense.

LUNKENHEIMER VALVES

correctly designed and sturdily constructed of the best materials, have established a high standard of durability and reliability. Adopt "Lunkenheimer" as your standard and you will have created another source of economy.

Lunkenheimer Distributors, located in all oil producing centers, carry complete stocks and render prompt service. Call on them for your requirements.



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The Lunkenheimer "Guide to Better Service" simplifies the selection of Valves and Engineering Appliances for any service condition. A copy of this interesting book will be sent upon request, without obligation.

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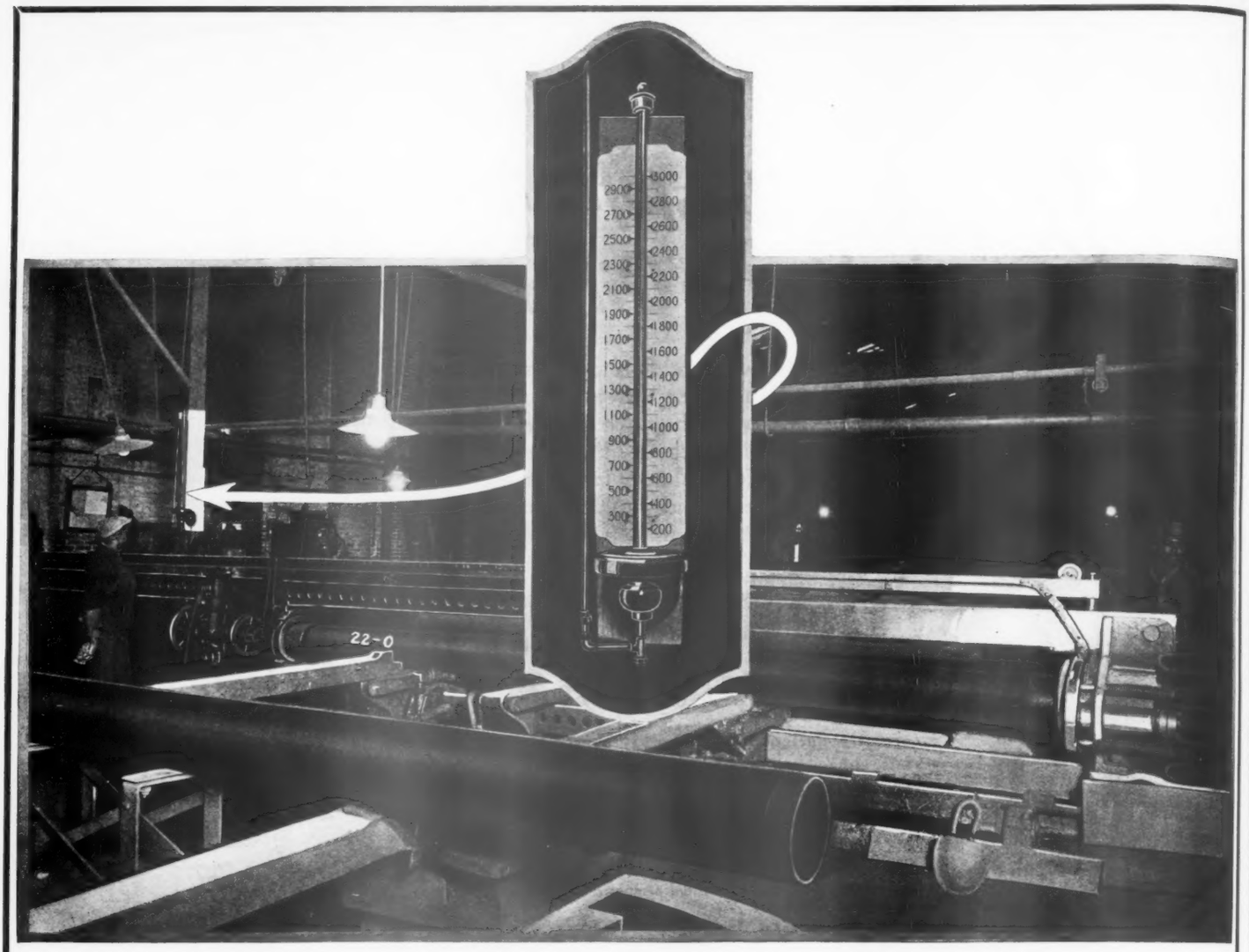

A Mercury Gauge Checks This Test

To hydrostatically test pipe is usual mill practice. South Chester goes a step further. Knowing the unreliability of spring pressure gauges, Chester has installed mercury columns on its hydraulic testers. By this means the chief operator can always check the man who applies the pressure, for the mercury column is as accurate as a thermometer. And Chester tests EVERY length on hydraulic testers equipped with mercury columns. The use of the mercury gauge is only one of the EXTRA precautions that Chester is taking to safeguard the oil operator in his use of its products.

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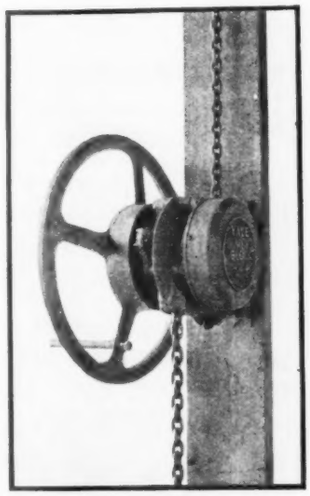
STEEL CASING

SPECIALISTS IN CASING FOR DEEP WELL DRILLING

TRADE **YALE** MARK

Ball Bearing Spur-Geared Winch

For Sustaining a load automatically in any position



Yale Ball Bearing Spur-Geared Winch (mounted)

Cut-open view of Yale Ball Bearing Spur-Geared Chain Block

Widely Used Adaptation of Yale Spur-Geared Block

The Yale Ball Bearing Spur-Geared Winch has the advantages of the well-known Yale Ball Bearing Spur-Geared Chain Block, with added advantages that make it highly desirable for use in inaccessible positions and where space is limited.

The Yale Winch is ideal for long lifts of heavy loads because it will hold the weight automatically in any position. The drop forged steel pawl working in conjunction with the ratchet wheel and friction discs have for years given satisfactory service to the user with the maximum of safety.

The illustration shows the mounted winch with hand operating balance wheel which can be changed to hand chain wheel and chain operation like the Spur-Geared block if desired.

As the spur-gear winch is based in design on the Yale Spur-Geared Block, the same excellent features are to be found in each. To summarize:

Ball Bearing load sheave—steel, bronze bushed.

One-piece driving pinion shaft—heat-treated and ground to size.

Heavy, tough, malleable iron pinion cage holding the bronze bushed steel gear and pinions.

Weston type load brake holds the load at all times—has been successful in the spur-geared block for nearly forty years.

The Yale-made steel load chain is die formed—electrically welded—accurately pitched—uniform in strength and finish.

Drop-forged detachable shackle, crosshead, oval pin and hook. Tested on long ton basis to assure ample reserve for safety in emergency.

YALE MAKES

Yale Ball Bearing Spur-Geared Chain Blocks, Yale Screw-Geared Chain Blocks, Yale Differential Chain Blocks, Yale Roller Bearing Trolleys and Cranes.

A Complete Line of Material Handling Equipment

Send for folder

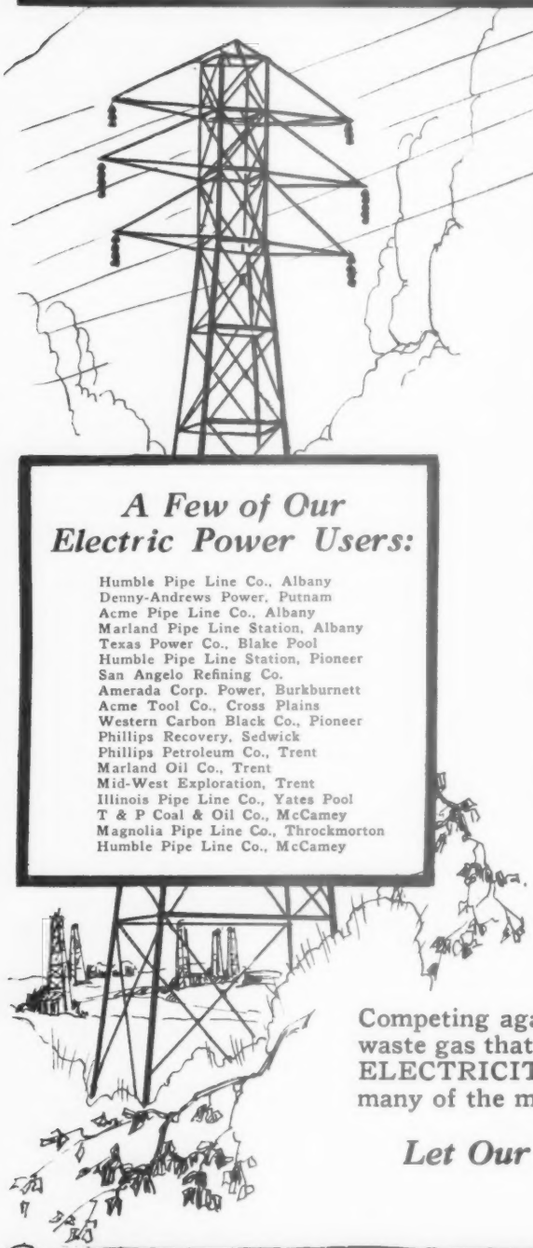
We have just issued a folder giving full details on the Yale Spur-Geared Winch. Copies of this may be had on application from us or from your jobber.

The Yale & Towne Mfg. Co., Stamford, Conn., U. S. A.
Canadian Branch at St. Catharines, Ont.

YALE **Hoisting and Conveying Systems**

YALE MARKED IS YALE MADE

SERVING 38 WEST TEXAS COUNTIES



MORE than 1200 miles of high potential electric transmission lines mesh the West Texas Oil Belt.

—Bringing power that is easily, effectively controlled to drive drilling rigs, and thus eliminate the greatest of all drilling hazards—fire.

—Bringing power to pump wells and pipe-lines, with only the throw of a switch to start or stop—utmost flexibility and absolute economy.

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Humble Pipe Line Station, Pioneer
San Angelo Refining Co.
Amerada Corp. Power, Burkburnett
Acme Tool Co., Cross Plains
Western Carbon Black Co., Pioneer
Phillips Recovery, Sedwick
Phillips Petroleum Co., Trent
Marland Oil Co., Trent
Mid-West Exploration, Trent
Illinois Pipe Line Co., Yates Pool
T & P Coal & Oil Co., McCamey
Magnolia Pipe Line Co., Throckmorton
Humble Pipe Line Co., McCamey

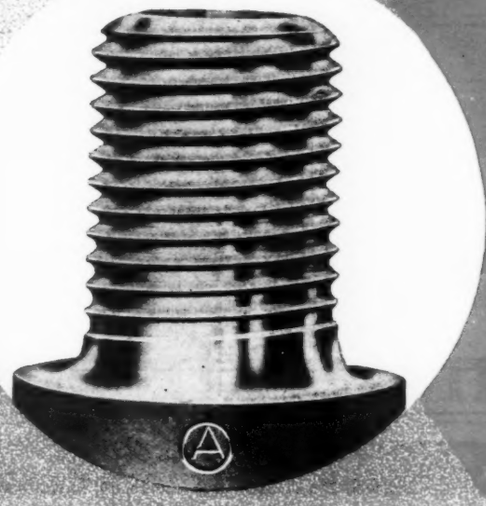
ELECTRICITY Performs every Oil Field Task

Competing against all other forms of power, (which includes waste gas that may be had in the fields at practically no cost) ELECTRICITY has proven more economical and efficient to many of the major oil companies.

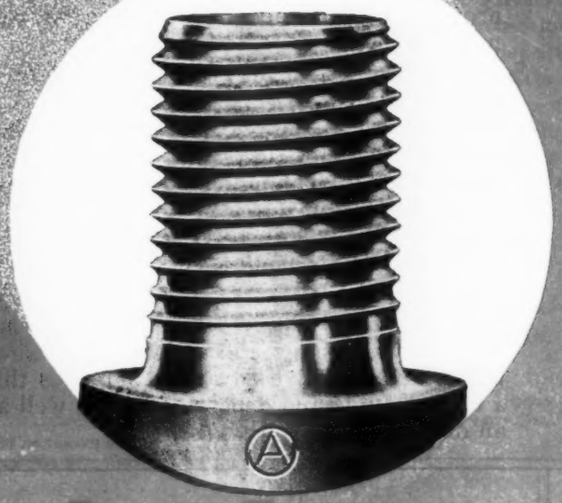
Let Our Engineers Solve YOUR Problem

WEST TEXAS UTILITIES COMPANY
ABILENE, TEXAS

Here's
the Axelson A·P·I specification Rod



and
here's the Axelson *Standard* Rod



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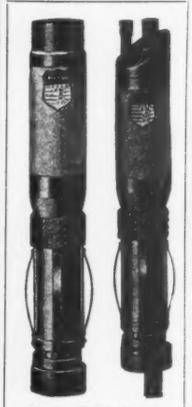
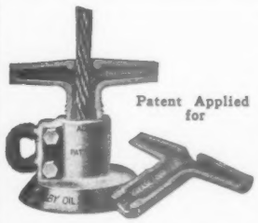
AXELSON SUCKER RODS



Hook Wall Packers



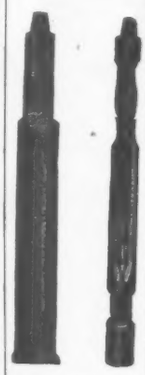
Patent Applied for

Common Style Larkin-Rigby Oil Saver, Showing Steel Hollow Top Grease Cup.

Automatic Style Larkin-Rigby Oil Saver

Patented 1914

California Style Larkin-Rigby Oil Saver



Drilling Bit Jars

Combination Anchor and Wall Packer—Conical Sleeve.

Larkin 3-in-1 Gas Anchor Packer

LARKIN'S IMPROVED SAND PUMP

The Larkin Line

Patent Hook Wall Packer—strongest, safest and most simple self-supporting wall packer on the market;

Special Gas Anchor Packers—with adequate protection of rubber for lowering in well under pressure;

Special Packers—for all types of special services;

Improved Sand Pump—20 feet long, flush outside, of uniform, Cold-Drawn "NATIONAL" Seamless Steel Tubing, equipped with Regular or Bit Bottom.

Never-Slip Pipe Grips—least expensive, swiftest and simplest device made for putting in casing.

Larkin-Rigby Oil Saver—the positive acting automatic latching and unlatching action, plus other exclusive advantages, makes this a time, trouble and expense saver as well as an oil saver.

The Larkin Service

Large stocks are carried which are always available for prompt shipment.

The Larkin stock rooms contain all types of packers known to the trade.

Packers will be built especially to suit your particular requirements.

Complete line of Drilling and Fishing Tools for sale and for rent.

Buy The Larkin Line at any of the leading supply stores.

Larkin & Co.

Butler — Pennsylvania — U. S. A.

Our Bulletin No. 30 describes *The Larkin Line* Write for it.

Note rough surface of wrought iron which soaks up the zinc and holds it in a vise-like grip, so that the coating won't flake or peel off.

Note relatively smooth surface of steel, giving such poor anchorage for zinc that it flakes and peels off in handling and wear.

Facts you should know about Galvanized Tubing

BYERS galvanized tubing as well as other pipe in recent tests has shown remarkably long life where other galvanized pipe has rusted out in a short time. The difference in favor of Byers is so marked (from 10 to 20 times longer life) as to call for explanations.

Zinc is such a brittle material that it has never been successfully used alone where strength and light weight are required. Even when applied on a steel base (as in galvanized pipe) its brittleness is so pronounced that the coating will chip or flake off with cutting, threading, screwing up, etc., and where subject to wear.

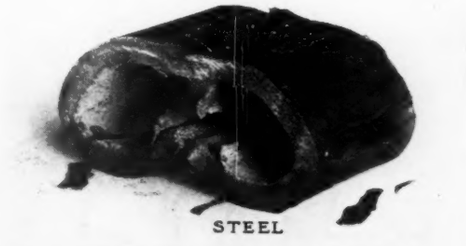
Zinc Sticks to Byers

When applied on Byers Pipe, the rough surface of the pipe metal holds the zinc in a vise-like grip which prevents it from peeling off. No metal except genuine wrought iron has this rough surface. So-called "iron pipe," sold under various names, does not have it, being in fact only steel of low carbon analysis made in open hearth furnaces.

Corrosion Test

If you have corrosion trouble anywhere, write us. A corrosion test is easily arranged, and may save you big money in future operations.

Byers galvanized pipe hammered flat, without showing tendency of coating to flake or peel off.



Steel pipe submitted to same test as shown above. Note how galvanizing comes off in big flakes.

Make this easy Test!

Cut off two pieces of galvanized pipe, from one to two inches long, one of them Byers, the other steel. Note how the galvanizing flakes off the steel from the end where cut. Then crush both pieces flat with a hammer, and see what happens to the galvanizing! It peels off the steel in big flakes, but sticks to wrought iron like glue.

A. M. BYERS COMPANY

Established 1864 Pittsburgh, Pa.

DISTRIBUTORS

Jarecki Mfg. Co. Oil Well Supply Co.
Norvell-Wilder Hardware Co.

BYERS GALVANIZED Tubing

GENUINE WROUGHT IRON

HOUSTON PIPE LINE

has STANDARDIZED on Westcott Valves

Here is another important pipe line on which WESTCOTT furnished ALL of the valves. This is the Houston Pipe Line Company's new trunk line from the Laredo gas area to Houston—650 miles of 18", 16", and 12½" pipe.

This company has advised us that it is exceedingly well pleased with the valves and that it is *definitely standardizing on WESTCOTTS for all pipe lines.*

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PRODUCING REFINING MARKETING

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Water May Affect West Texas Output

Highest daily average estimated production in 1926, week ended Dec. 25, 2,385,139 bbls. Lowest in 1926, January 30, 1,915,960 bbls.

Encroachment in Winkler County Being Watched Closely. California Starts Upward Production Swing

By Andrew M. Rowley

Highest daily average estimated light oil production in 1926, week ended Dec. 25, 1,797,349 bbls. Lowest in 1926, Jan. 30, 1,371,600 bbls.

Increasing showings of water in two groups of wells in the Winkler County Field in West Texas may have an important bearing upon the ultimate production there although sufficient data are not available upon which operators might base any definite conclusion as to the importance of the encroachment. Needless to say the situation is being watched very closely as there are many operators who believe water encroachment will be an important factor in West Texas and that if wells there are opened and produced to capacity, the life of the field as far as big production is concerned will be comparatively short.

California registered a slight increase during the past week and it is probable the production trend there will be upward until about next May. The fact much practically proven acreage in different fields there is held by large companies who can develop it conservatively will aid the situation and prevent any great flood of oil being brought to the surface as would be possible otherwise. Aside from the deep horizon at Long Beach, there are deeper producing horizons in other fields such as Inglewood, Seal Beach and Dominguez so California's production can be maintained at a high level for a long time.

Cold weather aided the natural decline in the greater Seminole area and another substantial drop in output there doubtless will be registered this week.

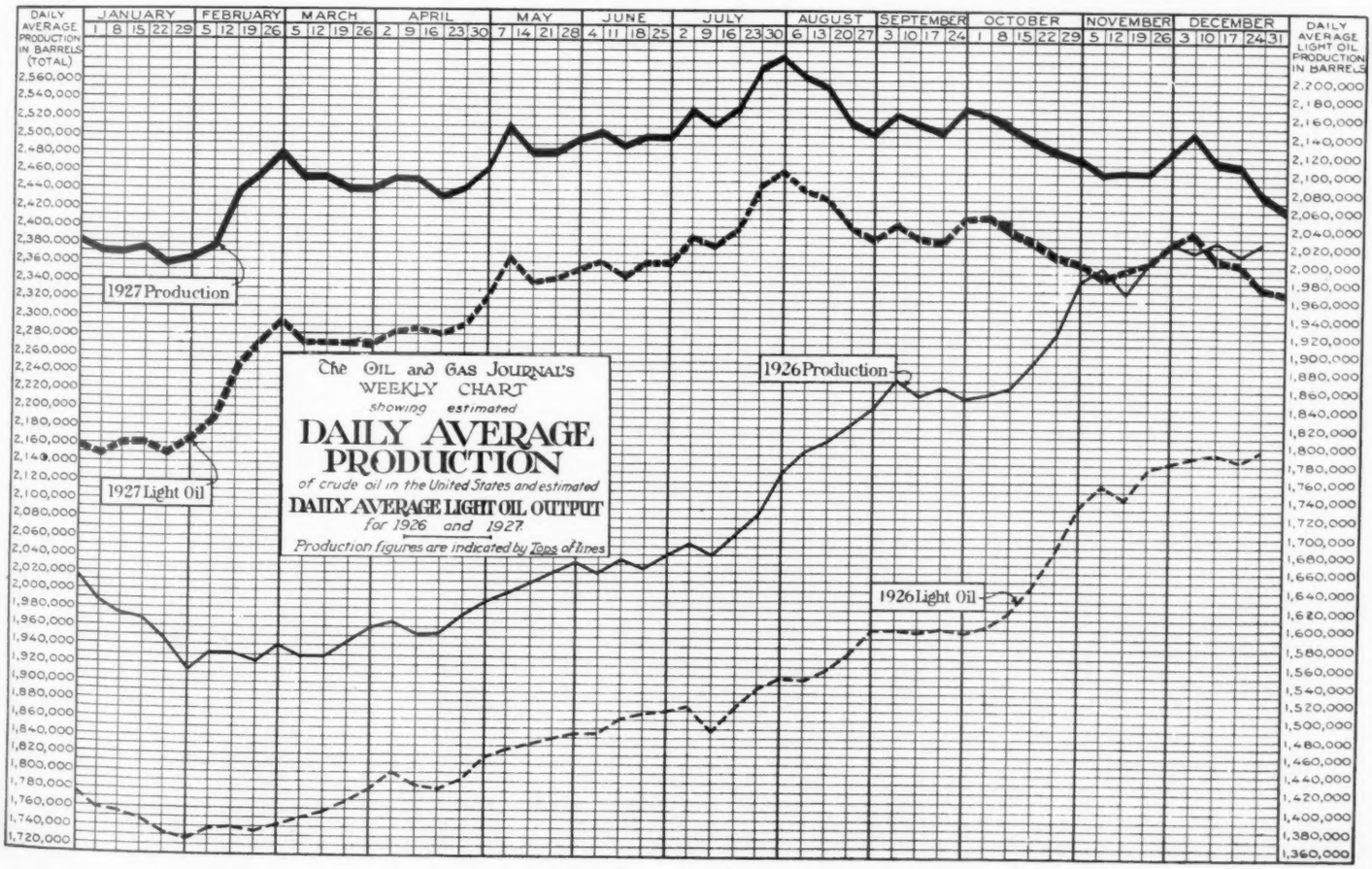
The general situation at the opening of the year looks much better than it has for some time. There is no doubt consumption this year will establish a new high record and more crude will be needed than ever before. However, it must be kept in mind about 70,000,000 barrels of crude was added to storage in 1927 and premature action in stimulating field activity by increasing crude oil prices might result in a continuance of conditions which existed during the latter part of 1927.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended December 31, and a comparison with the previous week follows:

	Dec. 31		Dec. 24	
Oklahoma—	Light	Heavy	Light	Heavy
Tonkawa	15,115	.....	15,160	.....
Burbank	38,565	.....	36,785	.....
Other Osage Fields	29,620	.....	29,765	.....
Cushing and Shamrock	21,030	.....	21,045	.....
Bristow and Eastern Bristow	24,515	.....	24,535	.....
Cromwell	10,570	.....	10,595	.....
Garber	10,415	.....	10,415	.....
Blackwell-Braman	8,710	.....	8,760	.....
Seminole	316,740	.....	367,410	.....
Wewoka	8,945	.....	10,405	.....
Northern Miscellaneous	112,050	.....	110,610	.....
Southern Fields	60,210	.....	60,470	.....
Total Oklahoma	701,485	.....	705,955	.....
North Louisiana	38,765	7,855	38,861	8,722
Arkansas	22,200	71,170	22,954	72,883
North Central Texas	134,390	.....	134,135	.....
West Texas	267,068	.....	265,902	.....
Texas Panhandle	80,235	.....	82,950	.....
East Central Texas	27,149	.....	27,572	.....
Kansas	107,815	.....	105,410	.....
Total Mid-Continent Area	1,379,107	79,025	1,383,739	81,605
Gulf Coast	.....	134,049	.....	137,937
Southwest Texas	.....	27,421	.....	27,300
Eastern	111,000	.....	112,000	.....
Rocky Mountain Area	75,697	.....	78,386	.....
California—				
Santa Fe Springs	38,000	.....	38,000	.....
Long Beach	118,000	.....	112,000	.....
Torrance	3,000	17,000	3,000	17,000
Huntington Beach	60,000	.....	60,000	.....
Dominguez	13,750	.....	13,750	.....
Rosecrans	8,750	.....	9,000	.....
Inglewood	19,500	12,000	19,500	12,000
Ventura Avenue	51,500	.....	52,500	.....
Seal Beach	42,000	.....	43,500	.....
Remainder of State	54,000	186,000	54,000	186,000
Total California	408,500	215,000	405,250	215,000
Total United States	1,974,304	455,495	1,979,355	461,842
Grand Total	2,429,799		2,441,197	

Total Decrease, 11,398 Bbls.; Light Oil Decrease, 5,051 Bbls.



Holiday Lull Still Dominates Market

First Few Days of New Year Fail to Bring Expected Increase in Spot Buying at Oklahoma Refineries

By W. T. Ziegenhain

The Oklahoma refined oil market witnessed the full effect of the usual holiday business lull during the last week and while an effort was made by some refiners to boost prices, this movement was met with new price concessions on the part of other refiners and the general market at best has only held its own.

Gasoline shipments were made at a very slow rate, the bulk of the material going on small spot orders. The lower endpoint grades were favored and this market was also helped by the fact there was some moved for export. Inquiries were received for additional amounts for delivery over the first part of January. Natural gasoline prices seemed to have struck bottom the week before and although that market was very weak, there was more buying of the C grade and in a few cases slightly higher prices were being quoted. There was sufficient export purchases of the A and AA grades to give them stability and this market was also aided just at this time by the fact one large purchaser in the New Orleans district asked that shipments on an order covering the month of January be hurried out and the shipments made by January 12, instead.

There was less than the usual demand for kerosene and some refiners were quoting prices slightly under those of last week. There has been no additional export buying and that market is now passing through the usual winter slowing up of consumption. Stocks of kerosene are relatively low in the Mid-Continent and although no immediate change to higher prices is expected, this product stands a good chance to rise within the next 60 days. Distillates have continued to move good and after the holidays this business is expected to further increase. Refiners are now finding the movement fully up to expectations, but this has not been the case up to this time.

The low cold test gas oils and the light zero cold test fuels moved fairly well, but there was not enough of this business to give the general fuel oil market appreciable strength. Instead the general fuel market was weaker as price concessions were made on the lower gravities. The gas oil market remained unchanged. Lubricants and wax also showed no change as only a fair volume of material moved.

Little Optimism

The new year certainly did not usher in a spirit of optimism among refiners as some had expected, and with plenty of gasoline, kerosene, gas oil and fuel oil available from all refining centers, the competition in the overlapping trade territories is forcing prices to new lows. As this continues from week to week, sales managers review the immediate future only with pessimistic feelings. This situation has only been broken over the last few months by occasional export inquiries for a few grades of gasoline and kerosene and more attention is now being given to the export market by Group 3 refiners than during the immediate past. With every point in the United States oversupplied and receiving the products from several refining centers, the only other field in which to sell excess production is in the foreign market.

But this market, too, is well supplied and with Group 3 refiners at a disadvantage from a freight standpoint, the only times Oklahoma has participated recently has been when prices were abnormally low, such as are now effective.

Foreign Outlets

To show how far the United States is ahead of other countries in the matter of

(Continued on Page 141)

REFINED MARKET BAROMETER

The year closed with little activity in the refined oil market. Gasoline was very plentiful in all refining sections at current prices, although a good demand was reported through the East. Gasoline prices showed further signs of weakening in the Mid-Continent as substantial concessions were given on material moving into differential territory. Natural gasolines remained weak. Kerosenes and gas oils were plentiful but unchanged in price, while fuel oil promised to go lower as new offerings were made at prices below the present general market. Distillates, especially the better grades, moved well and this product was the only one to show marked activity. Lubricants and wax did nothing more than hold at last week's prices, as only a fair volume was shipped.

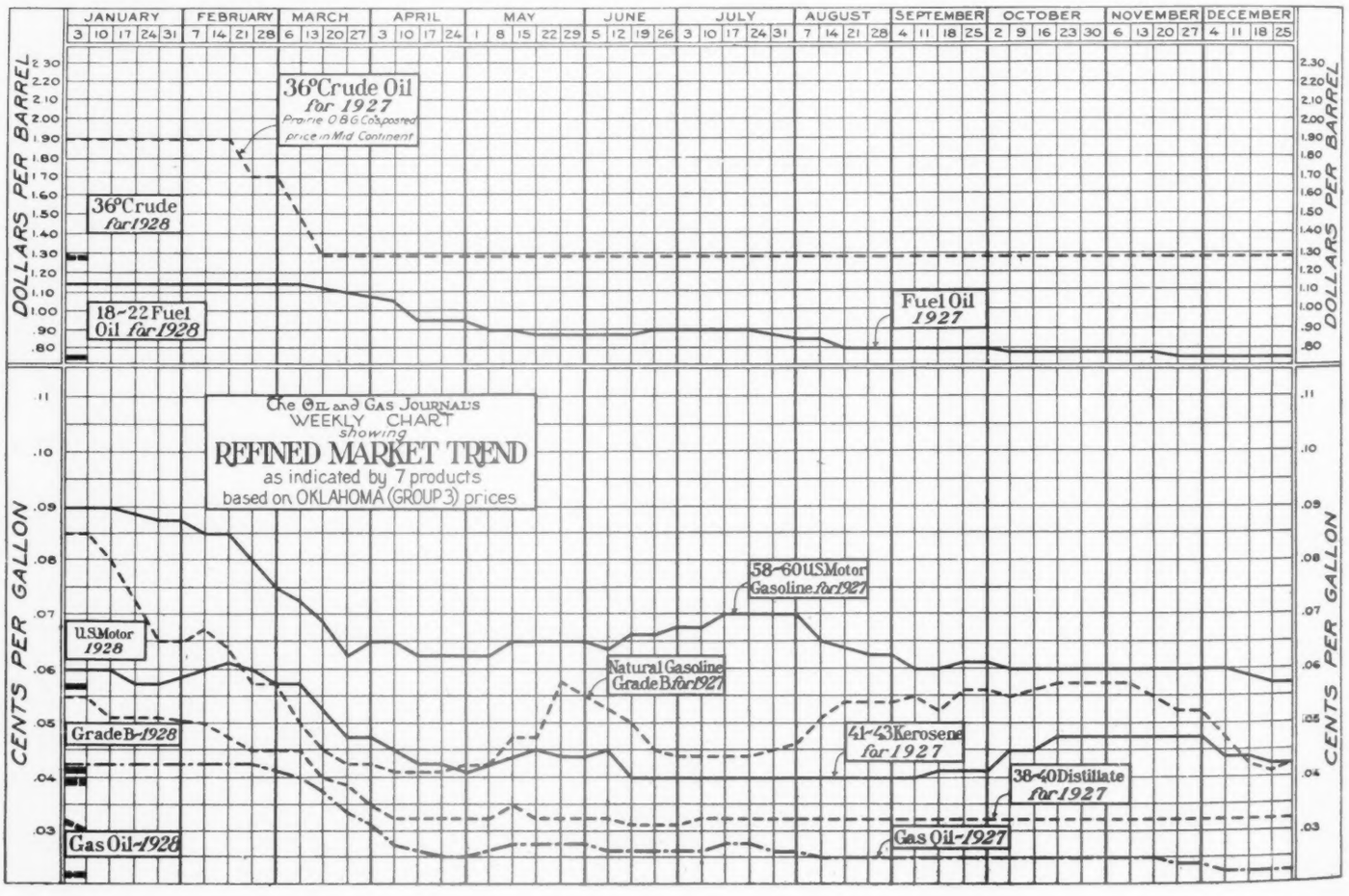
Mid-Continent—Gasoline and kerosene moved very slowly, and although there were no general price changes, concessions were offered in some cases, which showed the lack of confidence in the future of these markets. Natural gasolines were weak, but prices remained unchanged. Furnace oil displayed the most activity, as rush orders were received as a result of the prolonged cold weather. Prices stood a good chance of going fractionally higher. The balance of the products were unchanged with fuel continuing very weak.

Atlantic Seaboard—There was little change in the general market as refiners were willing to supply a good demand at current prices. A part of this is going direct to large consumers, such as garages and delivery companies, without going through the retail stations, and this practice is working a hardship on marketers. Kerosene was firm as the domestic consumption and exports increased. Gas oil gained strength as refiners chose to hold their present stocks for cracking. Bunker fuel was weak with concessions reported on large purchases. Lubs and wax remained very weak.

Pennsylvania—Except for slightly better prices on cylinder stock and bright stocks the market remained unchanged.

Chicago—A very active furnace oil market featured the trading, but aside from this little change is seen.

California—Gasoline consumption declined and that market was slightly weaker, while no change is seen in the balance of the market.



Refinery Operations in West Texas

Local Demand Small and Freight Rates Relatively High in Interstate Shipments. Three Plants Now Operating

By C. O. Willson

The large production of crude oil in the West Texas area coupled with the feeling that it will continue to be a major source of supply for an indefinite period is causing many refinery organizations to consider that section of the state as to its possibilities in the location of new refineries. The discovery of new fields in the past has always prompted these investigations resulting generally in the construction of new refineries in or near the field.

A notable exception to this rule has been furnished in the development of the Seminole Field of Oklahoma during the past year. This field which ranks among the greatest in the production of crude oil has not resulted in the construction of new refineries. The fact that the large pipe line companies immediately connected to the field and the already keen competitive condition existing among refiners in Oklahoma largely accounts for this condition. The Seminole situation reflects the fact that organizations contemplating the building of refineries are making careful investigations before locating new plants.

Companies have come to realize that something more than a temporary crude supply is necessary before a permanent investment in a new refinery is justified. The character of the crude oil, market outlets and freight rates are among the factors which are receiving consideration in the surveys being made of the West Texas area.

Previous articles appearing in The Oil and Gas Journal have discussed the character of the West Texas crude oils now available. The crudes are all of relatively low gravity, some of the crudes having no gasoline or kerosene obtainable by natural distillation. The impurities in the crudes, consisting primarily of sulphur compounds, present special processing difficulties due to corrosion of equipment. These same impurities add to the difficulty of chemically treating the finished products. These manufacturing problems, however, are being rapidly solved. The per barrel refining cost probably will always be high and the yields of light end products relatively low when compared with the bulk of Mid-Continent crude oils. This difference in values no doubt will be reflected in the posted prices so that the operator with the proper equipment should not be placed at a disadvantage so far as actual manufacturing costs are concerned.

Three Refineries at Present

At present there are three refineries operating in the West Texas area. The largest plant and the latest to start operating is located at McCamey. It belongs to the Humble Oil & Refining Co. and operates on crude oil brought by pipe line from the Crane, Upton and Winkler County Pools. At present it is handling between 10,000 and 12,000 bbls. of crude oil daily. Some finished gasoline is being made although the bulk of the output is sold as fuel oil. Located on the Orient Railroad, the company sells considerable fuel oil to that railroad. The excess is being sold over a wide area.

At San Angelo a small skimming plant is operated by the San Angelo Refining Co. This plant has a capacity of 2,000 bbls daily. It is operating with crude oil from the Crane-Upton Pool, the crude being brought to the plant by tank cars. The president of this company is W. B. Hassett, who is also president of the Imperial Refining Co. with a refinery at Ardmore, Okla., and the Kettle Creek Refining Co. with a refinery at El Dorado, Ark. The bulk of the output of the San Angelo refinery is distributed in West Texas.

The oldest operating plant in the West Texas area is that of the Col-Tex Refining Co. located at Colorado. The crude oil run to stills of this company at present are between 7,500 and 8,000 bbls. of crude oil daily. The Anderson-Prichard Oil Corp. of Oklahoma City is associated with the Standard Oil Co. of California in the ownership and operation of the refinery. The same interests have considerable production in Mitchell County where the refinery is located and this crude is available by pipe line to the refinery. This supply is supplemented by purchases from other near-by pools.

All three of these refineries so far as possible are disposing of their refined products in the West Texas area. The three, however, have excess material which is being sold in direct competition with refinery groups in the Mid-Continent area.

Rate Situation

The situation in regard to rates to interstate consuming points is summarized in the accompanying table. The data in this table show the relationship between rates from the refineries now operating in the West Texas area compared to Oklahoma (Group 3) the latter being the most important refining center of the Mid-Continent area.

The table clearly reflects the rate handicap the West Texas refineries have to absorb in the interstate sale of their plants' output due to the fact that they are located longer distances from the main consuming markets. In regard to rates it should be pointed out that there is considerable confusion as to just what rates are in effect as the carriers are constantly making important changes.

It will be seen from the table that the rate from Oklahoma (Group 3) to Chicago on gasoline or kerosene which are classified as refined petroleum is 36 cents per 100 pounds or 2.38 cents per gallon. The rate from San Angelo or Colorado, Tex., is 41 cents per 100 pounds (2.71 cents per gallon) and 44.5 cents (2.94 cents per gallon) from McCamey. Thus a refinery shipping gasoline from San Angelo or Colorado would have to take .33 cent per gallon under the Oklahoma refinery price. The differential in the case of the McCamey refiner is .56 cent per gallon.

In the heavy oil end the rate differential is of equal importance. Due to the low gravity of the West Texas crude oils the bulk of the refinery output is fuel oil and gas oil. In shipments to Chicago the present rate on fuel oil and gas oil is 30 cents per 100 pounds, or 93 cents per barrel. The rate from San Angelo or Colorado is 35 cents per 100 pounds ($1.09 per barrel) and from McCamey 37 cents per 100 pounds ($1.15 per barrel). This rate differential places the San Angelo and Colorado fuel market for Chicago shipment 16 cents per barrel under the Oklahoma market and 22 cents per barrel in the case of McCamey. This comparison is based on the assumption that the fuel oil and gas oil were of the same specifications.

Other middle western points can be taken in the table and it will be found that this same relative rate situation exists. This area is the logical outlet for the West Texas refined products for any large surplus over Texas requirements. Texas is surrounded by states

(Continued on Page 92)

FACTORS IN WEST TEXAS REFINING

CRUDE SUPPLY

Approximate production from all fields of 275,000 bbls. daily. The bulk of the crude oil is of low gravity with small yields of light end products from natural distillation.

Impurities in crude oil present special manufacturing problems including the treating of light end products. Refiners are rapidly solving these problems. Tests of representative grades of gasoline showed that they had high antiknock value.

At present three refineries are operating as skimming plants handling approximately 20,000 bbls. of crude oil daily. The remainder of the crude oil is being run to storage or is being refined at plants located outside the West Texas area.

FREIGHT RATES

At present Texas refineries are producing approximately five times as much gasoline as is consumed within the state. There are also large excesses of other refined products, which means that the output of refineries in West Texas must be sold in competition with plants already operating in other sections. Texas is surrounded by states which also have surplus refinery output.

Outside of local demand, West Texas refiners absorb a freight disadvantage of from 2½ to 10 cents per hundred pounds in their interstate or intrastate shipments when selling in competition with other Mid-Continent refinery groups.

LOCAL DEMAND

The local demand of West Texas covers a wide but very sparsely settled area. It is estimated that a 10,000-bbl. refinery with a 20 per cent yield could furnish all the gasoline consumed in an area 225 miles square. Local consumption of other refined products relatively small.

Freight Rates on Refined Petroleum Products From West Texas and Oklahoma Refining Centers to Representative Consuming Points in the Middle West

To—	Oklahoma (Group 3) A Cents Per 100 lbs.	Oklahoma (Group 3) A Gal.	Oklahoma (Group 3) B Cents Per 100 lbs.	Oklahoma (Group 3) B Bbl.	San Angelo-Colorado, Tex. A Cents Per 100 lbs.	San Angelo-Colorado, Tex. A Gal.	San Angelo-Colorado, Tex. B Cents Per 100 lbs.	San Angelo-Colorado, Tex. B Bbl.	McCamey, Tex A Cents Per 100 lbs.	McCamey, Tex A Gal.	McCamey, Tex B Cents Per 100 lbs.	McCamey, Tex B Bbl.
Kansas City, Mo.	27	1 78	21.5	66	34	2.24	27	84	35.5	2.34	28.5	88
Des Moines, Iowa	33	2.18	26.5	81	38.5	2.54	31	96	40	2.64	33	101
Cedar Rapids, Iowa	35.5	2.34	28	87	41	2.71	33	102	42.5	2.81	35	109
Fort Dodge, Iowa	36.5	2.41	29	90	42	2.77	33.5	104	43.5	2.87	35.5	110
Mason City, Iowa	38	2.51	30	93	43.5	2.87	35	109	45	2.97	37	115
Omaha, Neb.	33	2.18	26.5	82	38.5	2.54	31	96	40	2.64	33	103
Lincoln, Neb.	33	2.18	26.5	82	38.5	2.54	31	96	40	2.64	33	103
Sioux City, Iowa	36	2.38	29	90	41.5	2.74	33	102	43	2.84	35.5	110
Sioux Falls, S. Dak.	40	2.64	32	99	45.5	2.97	36.5	113	47	3.1	38.5	120
St. Louis, Mo.	[1]30	1.98	[1]24	75	[2]35	2.31	[2]29	90	*37.5	2.47	*31	96
Keokuk, Iowa	33.5	2.21	27	84	38	2.51	30.5	95	39.5	2.61	32.5	101
Dubuque, Iowa	38	2.51	30	93	43	2.84	34.5	107	44.5	2.94	36.5	113
Chicago	[2]36	2.38	[2]30	93	[4]41	2.71	[3]35	109	*44.5	2.94	*37	115
Milwaukee, Wis.	[2]39.5	2.61	33.5	104	44.5	2.94	[3]38.5	120	*47.5	3.14	*39	121
Wausau, Wis.	36	3.04	37	115	51	3.36	41	127	52.5	3.46	43	134
St. Paul, Minn.	42	2.77	33.5	104	47.5	3.31	38	118	49	3.23	40	124
Duluth, Minn.	47	3.1	37.5	116	52.5	3.46	42	132	54	3.56	44	137

A—Refined petroleum. B—Fuel and gas oil.

*No through rates in effect; rates shown are those prescribed by the Interstate Commerce Commission, in Docket 15584, now under suspension.

[1]Rate of 31½ cents on refined and 25 cents on fuel and gas oil prescribed by I. C. C. Publication doubtful.

[2]Rate of 36 cents on refined and 29 cents on fuel and gas oil prescribed by I. C. C. Publication doubtful.

[3]Rate of 38½ cents on refined and 31 cents on fuel and gas oil prescribed by I. C. C. Publication doubtful.

[4]Rate of 43 cents on refined and 34½ cents on fuel and gas oil prescribed by I. C. C. Publication doubtful.

[5]Rate of 41½ cents on refined and 33 cents on fuel and gas oil prescribed by I. C. C Publication doubtful.

[6]Rate of 46 cents on refined and 37 cents on fuel and gas oil prescribed by I. C. C. Publication doubtful.

Rates on Refined Petroleum Products for Export or Coastwise Movement

To—	From Group 3 Cents Per 100 lbs.	Group 3 Gal.	Fort Worth Cents Per 100 lbs.	Fort Worth Gal.	San Angelo Cents Per 100 lbs.	San Angelo Gal.	McCamey Cents Per 100 lbs.	McCamey Gal.
Galveston, Tex.	22	1.45	20.5	1.35	24.5	1.62	39.5	2.61
Houston, Tex.	22	1.45	20.5	1.35	24.5	1.62	22.5	1.48
Port Arthur, Tex.	22	1.45	20.5	1 35	24.5	1.62	39.5	2.61

California Decline in Early Summer

Production May Approximate 680,000 Bbls. About April. Long Beach Deep Zone Peak May Be Overestimated

By J. E. Eaton
Consulting Geologist.

California production is about to start strongly upward. Unless restrictive measures are taken, a first peak approximating 680,000 bbls. daily is expected in or about April of this year. A decline will then probably start in early summer. The summer decline may continue until late in the year, or, possibly, into the early part of 1929. The foregoing outlook will be subject to considerable revision if additional crude is shut in, or if drilling is restricted by mutual agreement.

An appreciable increase in California production in the far future has been apparent for many months due to the discovery of new oil fields,* but it was not anticipated that a first increase would come so soon. The sudden development of a deep oil zone at Long Beach has caused an upward swing to arrive ahead of schedule. The major rise, predicated on new fields, will almost certainly be delayed until 1929.

The marked influence of the deep zone at Long Beach on the state total is shown on the accompanying graph by an abrupt sustaining of production in the last week of October, 1927. At about this time, a series of deep-zone wells at Long Beach making 3,000 or more barrels of oil each caused the California curve to flatten, and immediately precipitated the drilling or deepening of at least 150 wells to sands of extreme richness in what is perhaps the world's greatest single oil dome.

A discussion of California's production for the year 1928 may be carried on in three sections: (1) Deep sands and areal extensions in old fields; (2) new fields, and (3) shut in and drilling policies which may modify production.

Long Beach

The deep zone at Long Beach is not a new discovery. The highly organized geological department of the Shell company of California appreciated the value of this zone many years ago, and a number of Shell wells have quietly produced millions of barrels from it since 1923. The depths and large productions of these wells were universally known, but their significance was not generally appreciated for the reason that many of the oil companies operating at Long Beach do not employ geologic advice. The better organized companies, however, one by one deepened a few wells to the deep zone and secured large yields which have partially sustained the production at Long Beach over a period of years.

The value of the deep zone was not heralded, for obvious reasons, and remained unknown to the average operator for a period of four years after its discovery. Recently, however, the bringing in of 3,000 bbl. wells in the midst of small pumpers disclosed the significance of deep drilling, and the present intensive campaign of drilling and deepening was inaugurated.

Approximately 150 wells have started for the deep zone during the past three months, either as deepening projects or as new enterprises. A number of these are poorly located, but most of them should secure production. Some 20 wells recently completed in the deep zone are averaging 1,700 bbls. each at this writing. This average is probably higher than will prevail in the future, for many of the wells now drilling are located near areas whic have been steadily drained for years by wells of the Shell and other companies and a number are edge locations.

Deep Zone Peak

Production at Long Beach will increase considerably during the next three or four months, but perhaps not as much as some persons have thought. Overestimating flush town lot areas has occasioned large losses in California during the past few years, notably at Torrance, Athens, Los Cerritos and Alamitos Heights, where few companies have paid out. The deep zone at Long Beach will probably make considerable money for operators who proceed with their eyes open, but its possibilities can be overestimated.

The new Long Beach peak is not easy to estimate for the reason that wells are still being started for the deep zone, and the ultimate number of projects is therefore unknown. On the basis of the projects now drilling and contemplated, and of the known geology, the writer would estimate the new peak at Long Beach at somewhere between 170,000 and 195,000 bbls., to be reached in or about April. This estimate is tentative only, and is subject to revision with further data.

Long Beach is in several ways one of the most remarkable oil fields ever opened for development. It has long been known to have productive sands locally aggregating more than 3,000 feet in thickness, and it is now indicated that certain wells could produce from as much as 3,700 feet of practically continuous oil sand. The field covers less than 2 square miles—to be precise, about 1,220 acres. This small domal area has so far yielded 260,000,000 bbls. of oil, an average of 213,000 bbls per acre. The higher parts of the structure considerably exceed this average.

It is indicated that the total ultimate production of oil from the Long Beach oil field by current methods of recovery will be in the neighborhood of 430,000,000 bbls., or the remarkable figure of 350,000 bbls. per acre. The total ultimate yield of the 1,220 acres at Long Beach will probably far exceed that of the entire proven area of the Seminole district.

Deep Sands in Reserve

Three other oil fields in Los Angeles Basin have deep oil zones which are undeveloped. Seal Beach, Dominguez and Inglewood have sands which are practically proven for large productions but which are being held in reserve by responsible companies during the present period of national overproduction. It is conservatively estimated that an intensive drilling campaign carried on simultaneously in these three fields could add 125,000 bbls. daily to the California output. The reserves in these fields are held under control at present, and there seems to be no particular danger from this quarter, but a reversal in policy on the part of one or more large operators could at any time start a drilling campaign. The situation in the main part of Seal Beach appears to be a little uncertain at this time.

The Ventura Avenue Field in Ventura Basin is comparable to Long Beach in ultimate production, is only about one-third drilled, and could if necessary increase its daily yield by 100,000 bbls. within a year. The reserves here are controlled almost entirely, however, by two major companies, and will almost certainly be conserved in the main. Large proven and undrilled acreages are held at Huntington Beach by one major company which has an unexcelled record for conservation. The foregoing are all light oil areas.

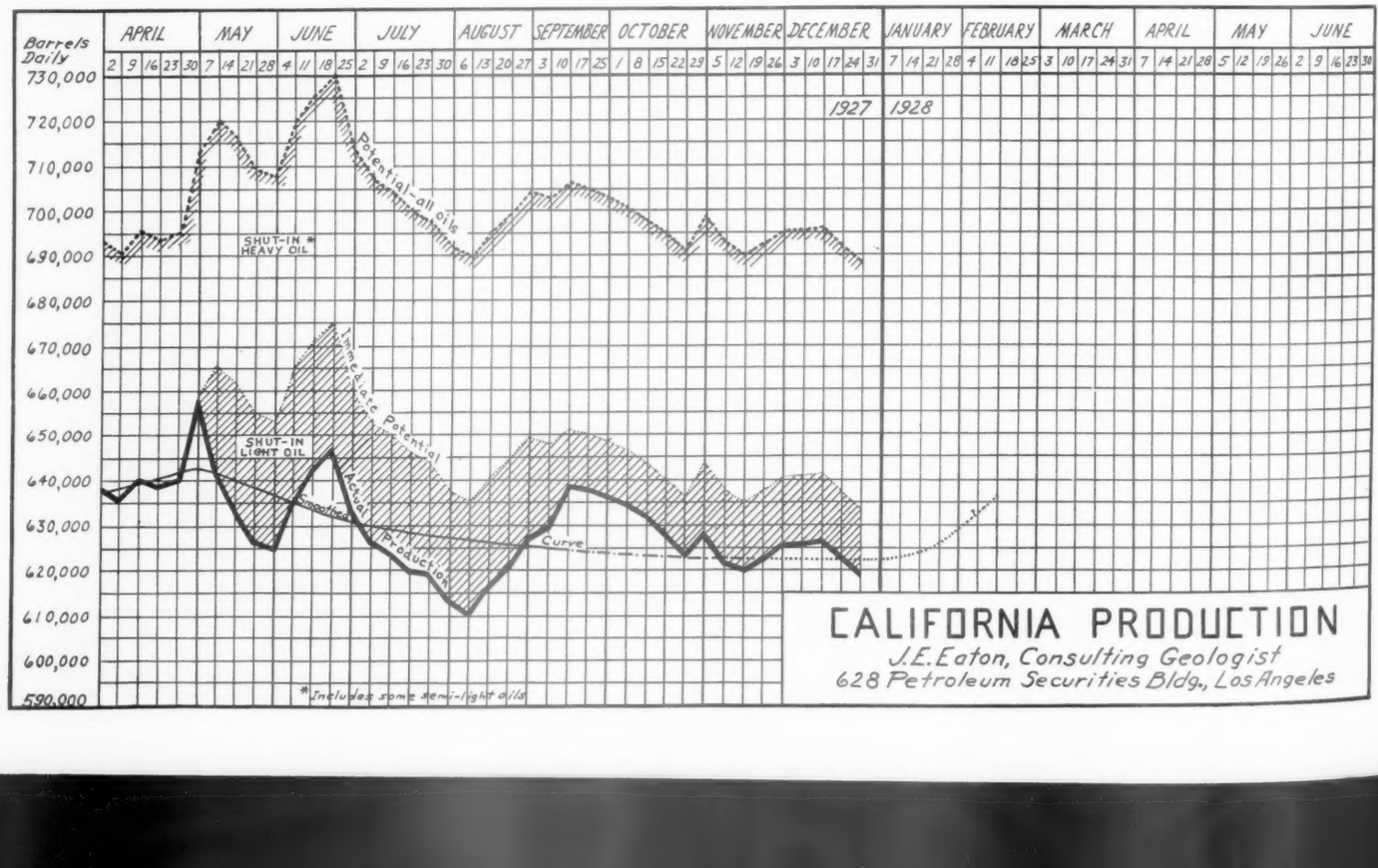
A number of fields which produce heavy and semiheavy oils (in general, the older fields) have very large undrilled proven acreages. However, as 55,000 bbls. of heavy crude is now shut in for lack of markets, these acreages will probably be continued in reserve.

These older areas yielding heavy and semiheavy oils are not spectacular, and as a result are often underrated in popular opinion. The decline curves of nearly all California fields are flat compared with the national average, but those of the heavy oil areas are abnormally so. Development of the acreages held in abeyance in these fields would result in adding production whose decline would be extremely slow.

The writer takes this occasion to remind the oil industry again that California production could, if needed, be raised to a total of around 1,000,000 bbls. daily in approximately one year's time. Of course, only an emergency would call

(Continued on Page 86)

*J. E. Eaton, "Big California Increase in 1928-1929." The Oil and Gas Journal; September 1, 1927, p. 33.



Revival of Interest in West Kansas

Discovery of Oil in Rooks County Followed by an Extensive Blocking of Leases. Checkerboarding in Southwest

By J. L. Dwyer

A region which is close to the borders of oil production at present, and which seems destined to be the scene of a moderate activity during 1928 is the western part of Kansas adjacent to the Russell Field of Russell County.

At this time, the greatest interest seems to be shown in Rooks County, and the counties immediately bordering it have been the scene of what might be termed a reflex action. Rooks County has one producing well which was drilled several months ago by the Vickers Petroleum Co. and others, and which was reported to have had an initial output of 90 bbls. At this time the well makes between 50 and 55 bbls. daily from the Oswalt lime, the same stratum which produces in the Russell Pool. The Oswalt in the Vickers' well was found at 3,228 feet, with the first showing at 3,251 feet, and the total depth of the hole at 3,263 feet. This is slightly deeper than the formation is found in the Russell Pool. The Vickers discovery well which is marked with a circle on the map accompanying this story, is located in the SE cor. SW, Section 11-9s-16w, and is approximately 20 miles northwest of the Russell Pool. The discovery well is situated on a block of 31,360 acres all held by Vickers and associates. Since the discovery well was drilled, the owners have employed the core drill to make further investigations of the possibilities of the block, and since the position of the well leaves little fear from offset troubles, the work of development is being undertaken very slowly.

The performance of the wells in the old Russell Pool has given hope that a profitable yield may be anticipated from the new Oswalt lime operation, for while the Russell County wells had little spectacular performance, their unusual longevity in point of production indicates that the field will have an ultimate yield per acre which will establish a very respectable figure.

Rooks County Heavily Leased

The territory immediately close to the Vickers well is heavily leased, for the most part in large blocks. South of the Vickers block, the Derby Oil Co. of Wichita, Kans. has a block. Just north of the Vickers block, the Midwest company and the Skelly Oil Co. are fortified with holdings. To the west of the Midwest and Skelly block, the Gypsy Oil Co. holds a block of leases; and southwest of the Gypsy block, Groh & Miller of Russell, Kans. have substantial holdings. The farthest northwest block shown is the property of Sweet and others reported to be from Denver, Colo. Immediately south of the Groh & Miller block, the Prairie Oil & Gas Co. has its block, and to the west of the Prairie, Cronin & Bartlett of Wakeeney, Kans. are in possession of a large block of leases.

The farthest southwest block is owned by the Findeis interests of Wichita, Kans. These parties have drilled two dry holes upon the property both of them passing 3,600 feet in depth. Encouraging showings in the Oswalt lime in both of these wells have caused additional drilling operations. To the south of the Prairie block, Graham and others of Lincoln, Neb. have a block, and The Texas Company has taken over the three small parcels of acreage joined on the map by a line.

To the southwest of the Vickers block, the small block marked "A" on the map is the property of a Mr. Anderson of Plainville, Kans.; and south of the Derby block, the Stearns & Streeter block is situated. The farthest southeast block in the region is owned by Gillette and others of Wichita, Kans. These blocks account for the majority of acreage within a reasonable distance of the well.

Southwest-Northeast Trend

The play in that part of the state, extends in a southwest-northeast trend, and covers a part of six counties, Graham, Trego, Scott, Gove, Lane and Ness. This locality was the scene of an extensive geological reconnaissance several years ago. It is situated in the part of the state known as the Great Plains of Kansas, and has an average elevation of 3,300 feet above sea level. The great rolling plains have on the surface, Cretaceous sediments which are deeply cut by streams. In the region which had so much geological exploration, there were numerous east-facing escarpments of the Niobrara chalk.

According to an article appearing in the Bulletin of the American Association of Petroleum Geologists (Oil Possibilities of Western Kansas by Charles T. Lupton, Wallace Lee and L. R. Van Burgh), 18 domes and anticlines have been mapped in the broad valley of the Smoky Hill River in Gove and Logan Counties. At least eight of these domes and anticlines are closed, with closures ranging from 50 to 150 feet. The presence of Tertiary beds and alluvium deposits prevented the determination as to the closure of several of the remaining structures. These 18 structures are situated in a belt ranging from 6 to 12 miles wide and 60 miles long. It is likely that the subsurface structure in western Kansas is likely to be analogous to that of the Eldorago, Kans., Field, in that buried structures are much more pronounced than the structural conditions at the surface indicate. For example, in the Shumway Dome the structure contours on the outcropping Fort Riley limestone shows a closure of about 30 feet, whereas, in this same area the structure developed

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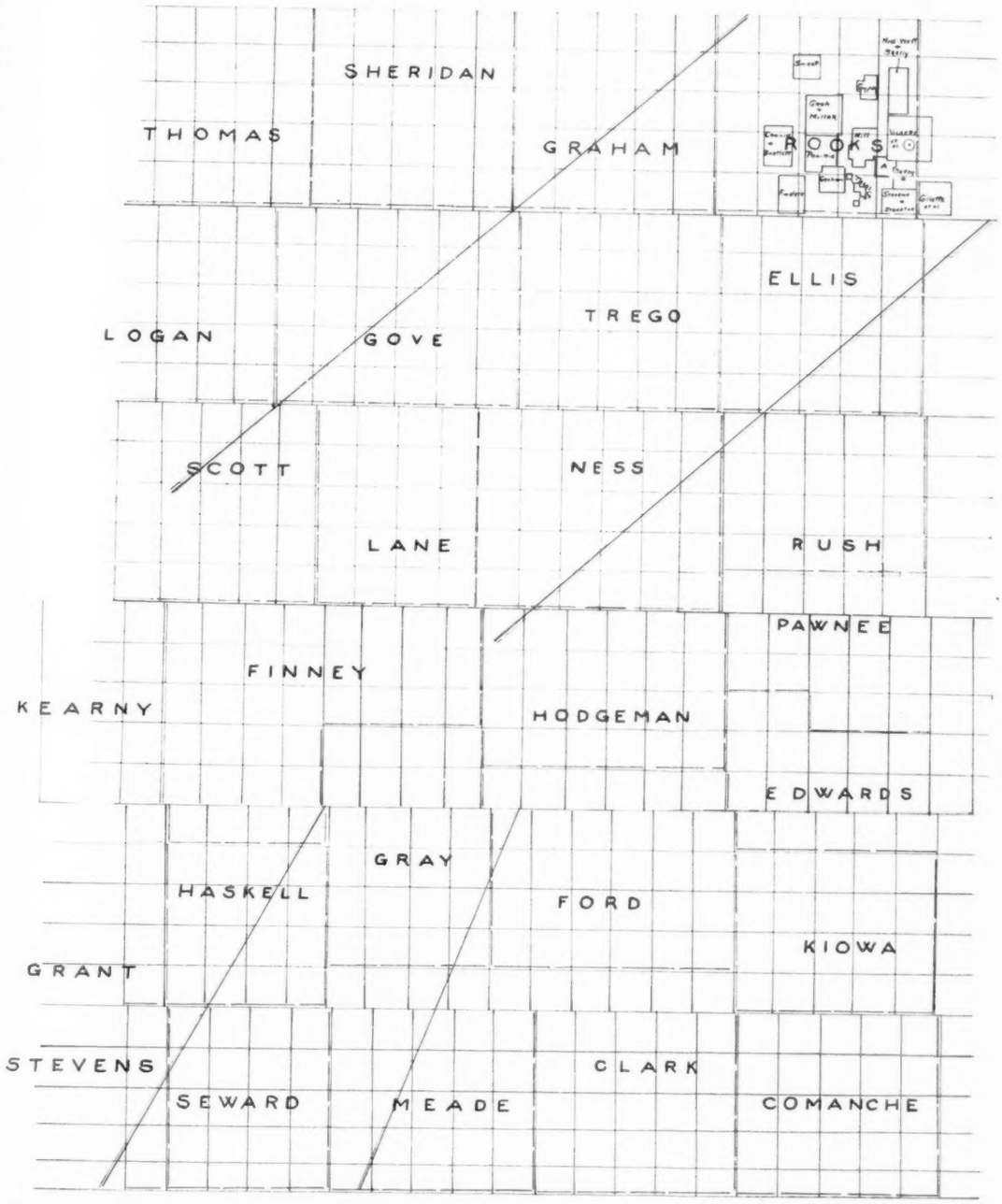

Map showing the Great Plains district of Western Kansas where a leasing campaign is under way. The various blocks of Rooks County are outlined, and the discovery well is marked with a circle. The double lines indicate as nearly as possible the most active regions, both in the west and southwest parts of the state.

Corrosion Costly West Texas Problem

Presence of Hydrogen Sulphide Gas With Oil Estimated to Be Costing Operators About $1,000,000 Yearly

By C. D. Lockwood

FORT WORTH, Tex., Jan. 2.—The corrosion problem in West Texas and the Panhandle, caused by the presence of hydrogen sulphide gas with the oil, is estimated to be costing the operators in those districts at least $1,000,000 a year. Wire lines and other drilling equipment, tubing, casing and steel tanks have all been damaged seriously by this gas which also endangers life and adds greatly to the discomforts of living around the West Texas fields.

Several of the companies have devoted considerable study to this problem lately and a number of experiments have been made in efforts to solve the difficulties and save money. Field developments have been carried on long enough now for some actual observation of tanks and equipment to be made after a year or more of service under these trying conditions.

An interesting example of what can happen to a wire line in West Texas occurred recently in Howard County. The Marland Oil Co. was drilling a deep test in its No. 1 Clay-E in the Chalk area. A new wire line had been installed and casing was being pulled when the well caught fire and the line was dropped in the hole. Eight days later the rig had been rebuilt and efforts were made to get the line out. Some pieces were obtained but it was found necessary to pull the 6-inch casing and then the drillers discovered that three bridges of wire line had been formed, most of the line having been broken up into pieces 6 or 8 inches long. Sections as long as a foot or so could be bent in the hands and all of the fibers broken.

In many cases in West Texas, ordinary steel lines last only for the drilling of one well, and sections have to be cut off the bottom end every day. This has been overcome to an extent by the use of galvanized wire lines, some of which will serve six or more wells.

Some of the companies are using galvanized wrought iron tubing in place of ordinary steel tubing.

Electricity has been used for power in West Texas because of the hydrogen sulphide. Purification plants are solving the gas problem, however, making the gas available for domestic purposes in oil field camps and for gas engine use, as described in a recent issue of The Oil and Gas Journal.

The biggest problem, perhaps, is the protection of steel tanks which have to withstand the attacks of this gas for long periods of time under conditions which do not allow a periodic inspection.

Observations made recently by one of the large companies tend to show that some of their tanks in the Panhandle are probably almost to the point of failure. In some places, the tank which was inspected could be penetrated with an ordinary lead pencil and other tanks on the same property have sprung leaks in a few places. These have been in use less than two years.

Causes of Corrosion

Corrosion of the top deck and sides of a tank is caused by condensation of water and the formation of sulphuric acid in conjunction with the sulphur gas. Iron sulphide scale is formed and this breaks off and drops to the bottom where it comes in contact with the metal and sets up a galvanic action as in a storage battery, the scale being of different chemical composition from the original steel. Therefore, if water can be kept from collecting on the under side of the roof of a tank, or if scale can be prevented from forming, corrosion of the bottom and sides as well as the top can be prevented. The condition of tanks which have been inspected recently show that the oil itself is not corrosive. Corrosion on the bottom of the tank was noticeable only where the scale apparently broke through the silt and paraffin and came in contact with the metal. On the sides, too, corrosion was uniform from the top to the oil level but from that point to the b.s. line was in evidence only where the scale had come in contact with the angle irons, etc.

Wood roofs are being installed on many tanks in West Texas to prevent formation of scale. Landreth Production Corp. is changing all of its roofs to wood in the Church-Fields Pool of Crane County, and the Humble Oil & Refining Co. likewise has wood roofs on many of its tanks.

The wood roof must be gas tight to be effective because where the roof is not gas and moisture tight, the gas apparently burns the wood. Chemists are not agreed on the cause of this damage, some attributing it to decay from fungi, alternate wetting and drying causing dry rot.

The wood roof must be thoroughly grounded or it will increase the hazard of destruction by lightning because it will build up a condenser.

Some advantages claimed for the wood roof are that no scale can form on it and also that it helps maintain the gravity of the crude in the tank, since the top is not so greatly affected by heat.

The cost is considerably greater than a steel roof. For a 55,000-bbl. tank a wood roof costs about $7,000 while the price of the average steel roof is around $2,700.

Another method of protection for the bottom of a tank is to coat it with asphalt or other nonconductor. This keeps the scale from coming in contact with the metal and prevents galvanic action. A 6-inch cushion of water is put on top of the asphalt to keep the oil from dissolving it. Coal tar or a mixture of coal tar and gilsonite could be used just as well and are being used in some cases.

The cost of a 1-inch coating of asphalt over the bottom of an 80,000-bbl. tank is about $900 at present prices and the cost of coal tar is a little higher.

The most practical and economical method of preventing corrosion at this time seems to be to coat the bottoms, sides and tops of the tanks with special nonconducting paint. Several makes of paint on the market are considered by chemists and engineers of oil companies reasonably gas-proof and capable of preventing the gas from attacking the metal of the roof even though condensation occurs.

Such a paint must be insoluble in both oil and water, must be elastic and not crack or powder with age, and must make a good bond with a clean steel surface. Before the paint is applied, the steel must be sand-blasted in order to remove the film of rust which exists on the surface and in the pits of the metal. Otherwise, the paint will not actually stick to the iron.

Painting the bottom of a tank costs just about half as much as the application of a 1-inch coat of asphalt. Using 1 gallon of paint to each 25 square feet of surface, the cost is about $450 for an 80,000-bbl. tank. Of course, these prices vary with different makes of paint but this is an average.

The Big Lake Oil Co. and Texon Oil & Land Co. are painting all of their tanks in the Big Lake Field of Reagan County, applying it to the sides and tops as well as to the bottoms.

Following are some extracts from reports which are typical of the condition in which many tanks in West Texas and the Panhandle are found after they are subjected to the effect of hydrogen sulphide gas for a year or more:

Reports Shows Conditions

"The under side of the deck showed a very uniform corrosion. The scale was from three-sixteenths to five-sixteenths of an inch thick. That part of the scale next to the deck was largely composed of iron oxides to a thickness on one-sixteenth of an inch. The outer portion of this scale was composed of practically pure iron sulphide of a rather tubercular condition. It is estimated that this scale represents at least one-sixteenth-inch of the original deck.

"That portion of the sides above the oil level showed the same uniform corrosion that existed on the underside of the deck. Little corrosion of the sides was noticeable down to the b.s. line, which in this tank had evidently been held below the 12-inch level. Scale from the roof had been in contact with the sides and angle iron at this point. Severe corrosion had occurred here and was rather uniform in its extent. The paraffin deposition at this point had evidently not kept the galvanic corrosion from proceeding at a rather uniform rate.

"The bottom plates of the tank showed a spotted corrosion condition. The corrosion on the bottom is localized to spots and where the corrosion had occurred the plate is very badly pitted. The pits were rather smooth and were undoubtedly caused by galvanic action between the scale from the roof and the metal of the plates. A fair average of the number of these corroded spots (3 to 5 inches in diameter) was eight to the sheet. A rivet head on the bottom occasionally showed a high corrosion. One plate had 20 corroded spots and 13 rivets in this plate had failed as a result of corrosion. The extent of failure of the rivets ranged from half the metal above the deck having disappeared to complete erosion of the rivet head and part of the shank of the rivet.

"It was impossible to accurately gauge the depth of the pits in the main body of the plates but from the inspection of these rivets it was estimated that corrosion had in many spots of the deck removed at least one-eighth-inch of the original metal."

Case of Treating Tank

A stock tank on a lease in the Texas Panhandle was recently examined to determine the extent of corrosion. At the time of this inspection the tank had been in use a little more than 14 months. The unusual feature disclosed was that the bottom had not been corroded at all from the inside although the underneath side of the top deck and the side walls were badly affected, while a ladder in the center of the tank was almost eaten away at the top and steam coil's near the bottom had suffered little. The explanation of the lack of corrosion on the bottom lies partly in the fact that this part of the tank was never in contact with air after once being placed in service and also in the fact that during most of the time this was used as a treating tank and the contents were constantly agitated so that the pieces of scale were broken up and washed away without being allowed to remain in one spot long enough to set up any destructive galvanic action.

This particular stock tank was new when installed in August of 1926. For four months no water was present in the oil but for the next nine months it was used as a treating tank, being alternately filled with emulsion and treated out by gas agitation. During this period the water content increased to 85 per cent. For the last month and a half in which it was in service, it was used merely to hold emulsion which was taken out at a point about half way up the side, and as much free water as possible was drawn off. Use of the tank was discontinued early in November because several bad leaks developed. A report on its condition when inspected follows:

"The underneath side of the top deck was badly corroded in places, the scale

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SOME DIFFERENCE OF OPINION ON MEXICAN OIL AMENDMENT

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Jan. 2.—There is a distinctly better feeling among oil men here with regard to the outlook in Mexico. However, there is still some difference of opinion as to the effect of the change in attitude reported on the part of Mexico, and all in all it may be some months before the new developments have a practical effect in reviving oil operations.

Francisco Diaz Lombardo, president of the Mexican Supreme Court, has given an analysis of the amendments to the oil laws passed as a result of the direct action of President Calles. He explains that "the present measure provides for confirmation of the rights of surface owners for an indefinite time, since the laws that prevailed prior to 1917 gave them ownership of the subsoil. With respect to rights acquired from surface owners, the measure recognizes those rights for the period set forth in the contracts, and not for 50 years, as the law previously provided. Accordingly it follows that the companies will be obliged to seek confirmation of their rights, and for this there is provided a year's time, counting from the date of promulgation of the law."

While sentiment is improved as a result of the new turn of events, the fact that the present amendments have not been officially accepted by the leading oil companies operating in Mexico indicates that either they have not completed a study of the amendments, or else do not join in the belief that the situation is entirely cleared up.

The amendments are regarded more as a modification of the former decrees, rather than a complete change in attitude on the part of Mexico. Apparently, Article 27 of the Constitution of 1917 stands, but the interpretation is changed. Whether it is changed sufficiently to do away with all differences between government oil companies, is not yet clear.

American oil companies having large investments in the Mexican oil industry are willing to do their share in clearing up all differences. They are unanimous in praise of the Mexican government for its change in attitude. However, they regard the real heart of the problem to be the recognition of property rights, subject to confiscation only with ample indemnification. They are not disposed to take any steps which involve the direct or indirect admission on their part that

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Offers Plan for Federal Co-operation

Professor Gibbs Presents Proposal to Enable Oil Industry Legally to Balance Production and Consumption

By L. Vernon Gibbs, B. S. LL. B.

Member Los Angeles Bar, Professor of Oil, Gas and Mining Rights, Southwestern University, Los Angeles.

The directors of the American Petroleum Institute have taken a forward step by favoring legislation of the permissive type. Such legislation, if properly drawn and sufficiently wide in scope, will give the American petroleum producers the necessary control over the rate of supply, and bring oil conservation into being as a reality.

The petroleum industry and the investors in oil securities have suffered immeasurable loss because the producing companies, who are responsible for the financial stability of the industry, are unable to control the rate of crude oil production.

In The Oil and Gas Journal of December 1, I said:

"No industry can be permanently prosperous, no industry can serve the best interests of the people, when the power of balancing production with consumption lies beyond the control of the units forming the basic structure thereof. It is imperative that the manufacturing and marketing units of any industry have the right to stop purchases of raw material when additional expenditures for that material result in waste and financial loss. Balance and stability within the industry, resulting in conservation, will not come until the producing and marketing units control the rate of oil production from leased lands, as well as from company-owned lands."

That is, in effect, the conclusion reached by the legal committee of the institute. These elemental truths must be kept before Secretary Work's Committee of Nine, which is instructed to study this question and to report thereon to the Federal Oil Conservation Board, the American Petroleum Institute, and the American Bar Association for later submission to the President and Congress.

Congress Must Be Informed

The Congress of the United States is limited in the information it receives, and is, to a great extent, influenced by the propaganda of those persons who keep their side of an issue continually before the public. The men in the oil industry, who are daily producing oil under the handicaps laid down by the oil and gas lease, the judicial decisions, and the antitrust laws, and who understand the peculiar problems of the industry, should, therefore, make every effort to place before Congress, and the public, the facts concerning overcompetition and overproduction, and the remedy for the correction of the evil.

It is certain that there will be investigation, and possibly, congressional action favoring control legislation at this term of Congress, and it would be suicidal for the industry to rest upon its oars at this time and fail to present the true cause of overproduction and the attendant fact that permissive and not restrictive legislation is required.

For years the oil industry has been flashing more or less exaggerated news of gusher wells and stock dividends in the daily press, so that the public has a biased viewpoint and, now, with retrenchment necessary, the public should be given the information which will bring a general understanding that the oil industry, like any other business, belongs primarily to the millions of individual investors in oil securities, and the national prosperity is based upon industrial prosperity in the great industries of the nation.

The President's View

President Coolidge, at almost the same time that the Petroleum Institute's legal committee was making its report to the convention at Chicago, said, in his message to Congress:

"The National Government is undertaking to join in the formation of a co-operative committee of lawyers, engineers and public officers to consider what legislation by the state or by Congress can be adopted for the preservation and conservation of our supply of petroleum. This has come to be one of the main dependencies for transportation and power so necessary to our agricultural and industrial life. It is expected that the report of this committee will be available for later congressional action."

Regulatory measures were before Congress last session, especially applying to the coal industry; and efforts were made to bring in the oil industry before adjournment. Unless the oil industry shows a united front, by backing up its leaders in the effort to control its own destiny by legislation directed toward liberation for the purpose of exerting necessary control over production and placing production upon an economic basis, there is no power which can prevent curtailment or control legislation of some variety by Congress. Although control statutes would be contrary to the spirit and letter of the Constitution, once they are passed, they would be hard to remove.

Municipal Gasoline Decision

An example of what can be held constitutional for the so-called "public good" is exhibited by the United States Supreme Court decision upholding the constitutionality of the act of the municipal government of Lincoln, Neb., in establishing a municipality owned oil distributing station in direct competition with established service stations paying license taxes, as well as direct taxes upon fixtures and land. That decision, following other previous decisions on state or municipal ownership of grain elevators, etc., goes about as far toward legislative and judicial confiscation as it is possible to go; as far toward paternalism in government as it is safe to go. That ruling certainly will take the business of service station owners, without compensation, and for a fiction called "the public good." There is nothing to prevent state ownership and operation of oil refineries upon the same principle. It is imperative that the opponents of legislative confiscation show the advocates of socialism that the economic and industrial welfare of the industries of the nation is for the "public good", and is of greater service and importance to the mass of the people than a municipal oil sales depot.

Stretching Government Functions

We are slowly being led or pushed into communistic ideals in government, directly against the plain intent of the American Constitution. A drive for a return to the fundamental principles of the Constitution should be commenced by economists, business men, and manufacturers.

As an indication of how far a public servant will go in favoring state ownership doctrines, it is enlightening to quote the views of Joseph B. Eastman, a member of the Interstate Commerce Commission, on public utilities. The commissioner goes so far as to dec'are that:

"If we should adopt the principle that every government function shall be performed directly by the state and shall not be farmed out to private enterprise, the ultimate result would be to increase respect for the Government and improve the character of our public service."

Histories of nations show that respect for government decreases in direct proportion to the amount of interference by government in industry and other fundamental pursuits of the people toward life, liberty, and the pursuit of happiness. Mr. Eastman's declaration does not tell all the truth upon the question, and it is upon this matter of "every government function" that sound economists and constitutional lawyers must take exception to his statement. Generally speaking, statutory operation of privately owned railroads, power systems, coal mines, and oil service stations is not exactly what the framers of the American Constitution considered necessary government functions.

It should be evident to the layman that we are stretching government functions to include altogether too many necessarily private industries and pursuits within that hypnotic term.

Your attention is called to this matter because it illustrates the danger of showing a precedent to be established, as in the Lincoln case; since the Supreme Court followed the decisions in the North Dakota Farmer Labor doctrine of state-owned grain elevators.

Now that the American Petroleum Institute has put itself and the industry on record as favoring remedial legislation, it is absolutely necessary that the recommended legislation enable the producing units of the industry to function without having a recurrence of overcompetition and overproduction. Otherwise, Congress will take the attitude that the petroleum industry does not know what it needs and will take it upon itself to make other enactments at the next session of Congress.

Point of the Problem

The point of this problem is, will the landowners' rights be taken care of if the producers of oil alone are the ones to determine the time of overproduction, and if the producers can curtail production upon individual acreage, with no guide other than exports and imports, pipe lines and no pipe lines, as set forth in the recommendation by the legal committee.

A decision upon the part of the producers alone that conditions of competition and production amount to economic, or actual waste, would not be sufficient authority for the application of curtailment measures as against the demands of landowners or royalty holders under their lease rights, or as against judicial mandate requiring immediate development of leased lands under existing oil decisions almost universally recognized by the courts. And, for any arbitrary date to be set by the producers without the concurrence of governmental authority after an official investigation to determine the necessity for curtailment, because of actual or economic waste, would be giving far more authority to the producers than can be held legal or good future policy.

Suggested Solution

The recommendations of the legal committee should provide for investigation by a government board able to determine when there is necessity for the removal of restrictions against co-operation in curtailment of drilling and production. Then, it is necessary that said board be de'egated authority to recommend the date for commencing such co-operative agreements; and that the board keep in close contact with production and con-

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LARGE INITIAL PRODUCTION OF DECEMBER'S CROP OF OIL WELLS

The big initial production of shallow-sand gushers in Pecos County, Texas, brought the total initial production of the fields east of California up to 525,159 bbls. in December. There were 372 fewer wells completed than in November, but the average initial production of the oil wells was 620 bbls. per well as against 421 bbls. in November.

At the close of December in 1926, there were 983 rigs up and 4,908 wells classified as drilling, a total of 5,891 operations. At the close of December, 1927, this field work had declined to 1,771 rigs and 3,418 wells drilling, a total of 4,189 operations. This indicates a falling off of 212 in rigs and 1,490 in drilling wells, a total of 1,702 operations caused by overproduction of oil in a few fields and the consequent general low price of crude.

SUMMARY OF ALL FIELDS
Completed Wells

Field—	Comp.	Prod.	Dry	Gas
Eastern	301	977	37	57
Central Ohio	38	10	12	25
Lima	14	205	3	0
Indiana	14	40	10	2
Illinois	12	55	7	0
Michigan	10	58	5	1
Kentucky	72	2,047	30	5
Tennessee	10	213	2	0
Oklahoma	293	59,647	92	52
Kansas	48	5,806	19	3
Texas Panhandle	32	11,194	6	3
North Central Texas	241	8,452	123	10
West Texas	117	401,014	3	0
East Texas	16	34	4	9
Southwest Texas	66	241	40	18
East Central Texas	6	240	5	0
Gulf Coast	113	29,391	60	1
Louisiana	67	1,543	19	28
Arkansas	22	571	9	4
Wyoming	17	517	6	0
Mon ana	15	50	9	3
Colorado	7	2,616	0	1
New Mexico	6	244	4	0
Total December	1,537	525,159	505	185
Total November	1,909	416,769	651	269
Difference	372	108,390	46	84

Summary of New Work

Field—	Rigs	Drg.	Tl.
Eastern	84	343	427
Central Ohio	18	71	86
Lima	7	25	32
Indiana	5	63	68
Illinois	4	25	29
Michigan	2	10	12
Tennessee	0	39	39
Kentucky	5	131	136
Mississippi	9	20	29
Alabama	0	7	7
Florida	0	13	13
North Caroline	0	1	1
Oklahoma	153	716	869
Kansas	50	184	234
Texas Panhandle	34	123	157
West Texas	123	313	436
North Central Texas	70	387	457
Southwest Texas	17	162	179
East Central Texas	2	8	10
East Texas	9	16	25
Gulf Coast	64	165	229
Louisiana	47	121	168
Arkansas	8	35	43
Wyoming	19	160	179
Montana	19	76	95
Colorado	16	83	99
Utah	2	25	27
New Mexico	7	96	103
Total December	771	3,418	4,189
Total November	775	3,499	4,274
Difference	4	81	85

OKLAHOMA
Summary of Wells Completed

County—	Comp.	Prod	Dry	Gas
Carter	9	235	6	0
Creek	28	1,138	9	5
Garfield	3	60	2	0
Grady	17	300	6	5
Grant	3	0	1	2
Kay	16	50	5	9
Muskogee	6	50	2	3
Okmulgee	13	35	4	5
Osage	30	8,011	8	8
Okfuskee	3	0	3	0
Pawnee	4	0	3	1
Pontotoc	14	1,338	1	3
Pottawatomie	12	1,741	4	1
Seminole	82	44,446	12	0
Stehpens and Cotton	11	749	2	4
Tulsa	9	405	4	1
Wagoner	14	9	10	2
Miscellaneous	19	1,080	10	3
Total December	293	59,647	92	52
Total November	376	98,896	122	42
Difference	83	39,249	30	10

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Shell Pipe Line Is Renewing Its Youth

Stretch of 420 Miles From Yale to St. Louis Subjected to Cleaning Process, Adding Years to Its Usefulness

By Thomas F. Smiley

They say an observant and ingenious pipe line man in Texas invented the machine with which the Shell Pipe Line Co. is reconditioning 420 miles of line from Yale, Payne County, Oklahoma, to St. Louis. Maybe he did, but it's a safe bet that a manicurist helped, for no man —pipe line or otherwise—would have thought of imparting a shiny polish in addition to thorough cleaning.

The pipe is uncovered, raised to the surface, scientifically scoured and burnished, treated with two applications of a protective coating, then lowered into the ditch again and reburied, its youth renewed and its vigor and stamina restored, even as a hot bath, a cold shower and fresh underwear change the whole outlook of a grease and sweat-soaked tool dresser at the end of a hard August day on the derrick floor—when he is lucky enough to get them.

The work is performed as methodically as is the ordinary laying of a pipe line. There is a crew of workmen for each phase of the job and each man has his own task. Progress is being made at the rate of one-half to three-quarters of a mile a day. The project is one of the biggest of its kind yet undertaken in any oil field.

The word "clean" acquires a new meaning for a man who has seen the transformation undergone by this pipe. When removed from the ground its outer surface is about the last word in metallic deterioration. After the machine has passed over it, exercising the magic of its myriad of tiny chisels, each digging insistently into the accumulation of foreign matter, to be followed by steel wire brushes that give a smart luster to a job already well done, it bears as close a resemblance to its former rot-eaten self as patent leather pumps in the store window bear to a pair of big-hole cowhide boots that have passed through a year's campaign in West Texas.

Line Laid in 1917

The line, a 10-inch one, was laid in 1917, and although it was a good grade of pipe, 10 years of underground existence resulted in a thick deposit of rust and scale. The entire line extends 670 miles, from Yale to Wood River, Ill., but part of the line lying east of St Louis was ruined by the Mississippi Valley floods in the spring of 1927 and new pipe was laid from that city to Wood River. Between St. Louis and Yale, however, it was decided to adopt the cleaning process.

The operation leaves the pipe as smooth and as bright as new steel, in perfect condition for the preservative coating which is expected to add another 10 years of useful life. The line transports crude oil owned by the Roxana Petroleum Corp., of which the Shell is a subsidiary, from the Cushing Field to the Roxana's refineries in Wood River.

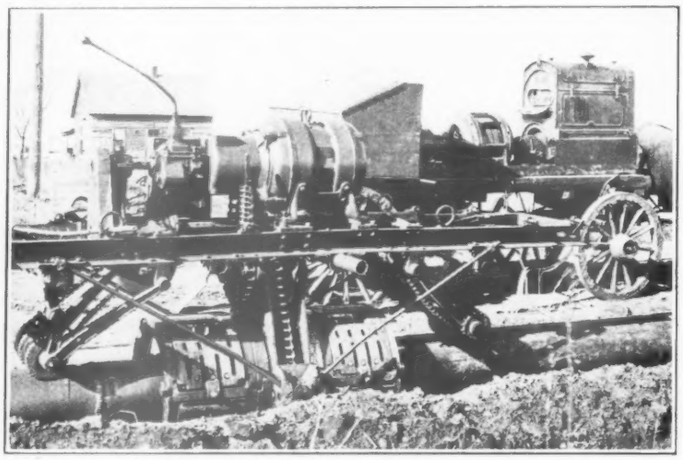
About 75 men altogether are employed on this job of rejuvenation. First comes a ditcher, removing the 3 feet or so of earth covering the line.

Then come three Fordson tractors, each equipped with a special winch and a stiff-legged boom to support a block and tackle. The tractors take their places at intervals of about 30 feet beside the ditch. Attached to the tackle rope suspended from each of the booms is a pipe hook that acts and looks like a giant pair of ice tongs. These hooks are adjusted about the pipe at the bottom of the ditch and the ropes are drawn taut.

At a signal from the foreman each of the tractor operators begins slowly to turn his winch. Steadily, carefully, the three tractors, operated in unison, raise about 100 feet of the pipe high enough to allow skids to be thrust under it. Then the tractors move ahead and repeat the performance.

Boom Has Important Role

A word about that stiff-legged boom, which has a lot to do with the smooth running of this job. The stiff leg is a telescoping pipe attachment which, when fastened to the outer end of the pipe-handling boom, prevents the tractor from tipping over and makes it possible for the boom to lift or lower heavy loads while stationary. It is constructed of heavy steel pipe and is fitted with a ribbed mushroom foot at the base and an attaching clamp at the top. It may be put on or taken off in a few minutes



Close-up showing the two cutter-heads, the motor which drives them, the traveling mechanism, the generator and the gasoline engine which drives the generator. Difference in pipe before and after cleaning may be noted here.

As it rests upon the skids the pipe is ready for the cleaner, which in its steady advance is accompanied by a horse-drawn wagon bearing a 17½-k.va., 1,200 r.p.m. generator, and a 30-horsepower gasoline engine manufactured by the Hercules Motors Corp. The generator is driven by the gasoline engine. The engine and the generator provide current for the 10-horsepower AC motor which forms part of the cleaning machine. This motor drives the cleaning mechanism and also the traveling mechanism which propels the device along the line.

The cleaning machine, made by the W-K-M Co., Houston, Tex., has two rotating cutter heads instead of one, differing in this respect from the standard machine, hitherto manufactured by that company. So satisfactory a showing has the double-headed machine made that it is understood this type will be made regularly hereafter.

Avoid Tying Up Auto Truck

The engine and generator are kept at one spot so much of the time that it was regarded as needless to tie up an auto truck for their transportation. An electric cable about an eighth of a mile long, extending from the engine on the stationary wagon to the motor on the moving cleaning machine allows the latter a play of virtually a quarter mile, permitting the engine and the accompanying generator to remain in one location until that much pipe has been cleaned. Then the wagon is moved ahead.

An outrigger wheel often is used in connection with the cleaning machine, but on this job a workman holds a balancing bar extending about 10 feet horizontally from the machine, and as he walks along beside the machine he keeps it upright.

A fourth tractor, which goes along with the cleaning machine, is equipped, like the three others, with a stiff-legged boom and block and tackle. Its duty is to raise the pipe slightly so that workmen may shift the skids to allow the cutter heads to pass.

The cleaning crew is followed by the paint crew, whose members apply the preservative coating. Brushes are used for the upper portion of the pipe. To treat the under side the fluid is spread on pieces of canvas, which, held so that they form a trough, are drawn back and forth across the pipe. After the first coat has dried a second one is applied. Drying requires 4 to 10 hours, depending upon the weather. The tractor booms then drop the pipe back into the ditch and a backfiller replaces the earth.

The entire process of unearthing, cleaning, painting and relaying the pipe may be performed in about 24 hours, but as several miles of pipe are aboveground at one time and no special effort is made to shorten the time intervals between the various steps, more than 24 hours actually elapses between the beginning and the ending of the job on any one joint of pipe.

Cleaner Is Heart of Operation

The heart of the whole operation lies, of course, in the cleaning device, the basic working principle of which is very much like that of a dressing tool used for squaring the surfaces of carborundum and emery wheels. The actual cleaning is accomplished by revolving cutters made of tool steel with sharp teeth hardened by a special process. There are 92 of these cutters, each a small disc, 23 being mounted on each of four spindles.

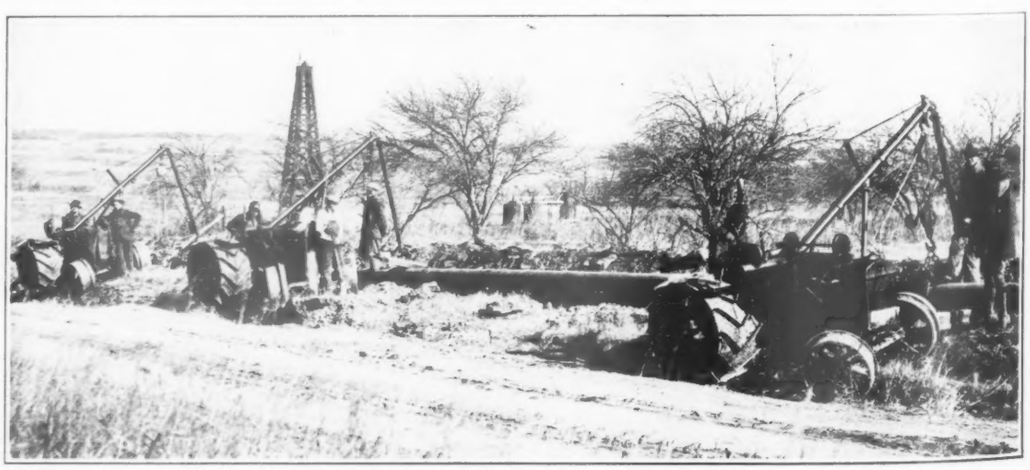
With the spindles firmly attached to the rotating cutter head, these cutters revolve with a crowding action around the pipe at approximately 160 revolutions a minute. Their performance is like that of diminutive cold chisels, only they strike thousands of blows each minute. Working loosely on their supporting spindles, they penetrate easily to the bottom of any pits in the surface of the pipe. Four stiff wire brushes sweep up after the cutting discs, removing all dust and small particles of dirt and leaving a glitteringly clean surface on which to apply the protective coating. As the cleaner moves steadily along the pipe it throws back a mass of red dust and flying scales.

The traveling mechanism, by means of sharp-toothed drive wheels, carries the machine along at an even speed which is adjustable to meet the conditions encountered. The rate of progress is affected by the number of sags and bends in the pipe and by the degree of rust and corrosion. When the condition of the pipe is particularly bad the speed of the cleaner is slackened to insure thorough work.

Some Distracting Figures

It is asserted that one of these pipe-cleaning machines will do the work of 75

(Continued on Page 90)



The three tractors and their crews, lifting the pipe from ditch.

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MEMBER AUDIT BUREAU OF CIRCULATIONS

A BETTER YEAR

If 1928 is not a better year than 1927 it will be the oil industry's own fault.

No matter how much potential production may be in sight, it can do no harm unless it is produced.

Seminole is passing and with it the conditions in the industry that made it disastrous. California has shown that it is able to regulate its production within reason. West Texas can do the same thing if the lesson of Seminole has been thoroughly learned.

The industry standing firmly together can control the situation. It knows that if it does not stand together it will start another flood of overproduction that will prolong the depression of the past year.

Every unit must recognize this and act accordingly. Disunion would simply be inviting continued disaster. The cumulative influence of opinion in the industry must be enlisted in impressing this fact upon every one in it.

That is the big question facing the industry this year—not how much oil can be produced but how much should be produced to meet the demand.

That demand promises to be the largest on record, assuring the industry a profitable year supplying it if it does not have to carry the unnecessary burden of an unwieldy surplus production.

The automotive industry anticipates the greatest production in its history during 1928, estimated by authorities at 5,000,000 cars. Even allowing 2,000,000 of these for replacements this indicates an addition to our market for gasoline and motor oil of 3,000,000 new customers, the largest ever recorded.

The new low prices for cars and the popular confidence that this is going to be an exceptional year for motor values, together with the increased buying power of the agricultural districts owing to better returns, will widen the market. Many who have felt the need for a second car will take advantage of the opportunity to secure a serviceable vehicle at a moderate price.

These considerations and the fact that hundreds of thousands postponed buying cars last year justify the automotive industry in its forecasts for a phenomenal season which, of course, will be reflected in increased gasoline consumption, probably at a higher rate.

So far as consumption goes the oil industry has every cause for congratulation. Its periods of depression are not due to declining demand over which it has no control such as the other industries occasionally suffer.

Nor is the consumption fluctuating or uncertain. It can be calculated with almost mathematical exactness from one year to another.

Notwithstanding this the industry has repeatedly brought disaster upon itself by overproduction. It is true that for reasons set forth in "The Oil Industry's Answer Today," published in The Oil and Gas Journal of December 1, it was not always able to prevent this. But at the bottom of it was the failure of the industry to realize its own responsibility.

It felt itself hampered by fear of governmental interference and by lack of cohesion. Then came Seminole and getting together.

That is the big hope for a prosperous year in 1928. Oil men today know that it can be done and that primarily it is up to them whether this year is to be better than 1927.

The overwhelming sentiment of the industry was demonstrated at the Institute at Chicago. Effectively exerted it can bring about a co-operation in the conservation of oil this year that will go far towards stabilizing the industry.

Another feature to be considered in expecting a better year is the difference between Seminole oil and West Texas crude. The Oklahoma flood was high in gasoline content and within easy access of the market. It went into consumption at once.

The West Texas crude is more difficult and more expensive to refine, and remote from the consumer. An equal volume of that crude would not be as menacing as Seminole. The danger, of course, is in adding to the already topheavy stocks.

Seminole is declining as Long Beach is increasing and the chances are the Long Beach peak will be passed before West Texas reaches its maximum. If the national production can be kept under 2,400,000 barrels a day all will be well. The increase in consumption should take care of that.

Increased consumption, however, should not encourage wild expansion of marketing facilities. Charles M. Schwab said the other day that while Americans led the world in efficiency in production we have a lot to learn about efficient distribution.

Nowhere is this truer than in the oil business. If overproduction has been the bane of the producing division needless duplication of outlets has been the great fault of the manufacturng and marketing divisions.

Just as producing more oil than is demanded forces down prices, creating more outlets than are needed cuts down the business available for each outlet.

Two grocery stores in a village of 100 people will not sell twice as much groceries as one. They will simply split the business so that neither can make a living.

There is just so much gasoline to be sold. Increasing the number of outlets is not going to increase the demand a pint. It simply reduces the average number of customers available to each station.

Of course the idea is that the keenest competitor will get the most business and the others less. But that is not the end of the story. Excessive competition begets excessive competition which sooner or later takes the form of price cutting. Then everybody in that area suffers.

That is the usual result of thinking of business in volume of sales instead of in terms of profit and loss.

This evil is intensified in the oil business because so many outside are attracted into it by the multiplication of stations. They think it must be profitable when there is such a duplication of outlets. The public, instead of being pleased with additional service which it did not need, thinks the same thing and the oil business is correspondingly misjudged.

As is not unusual at this season of the year there are all sorts of rumors about consolidations and mergers but in every instance they have been denied.

Thoughtful men in the industry have been urging a determined effort to readjust the distribution end on a sane basis. It cannot be done by any single company or individual. The remedy must be

(Continued on Page 39)

In Texas

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DRESSER COUPLINGS DOMINATE

Water Situation in Winkler County

While Operating Companies Are Not Alarmed, Conditions Cause Some Uneasiness and Revision of Yield Estimates Downward

By C. D. Lockwood
Staff Correspondent, West Texas Fields

FORT WORTH, Tex., Jan. 2. — The water situation in Winkler County continued to hold attention in West Texas this week as the holiday lull, and the lowest temperatures of the winter held field operations at a low ebb.

West Texas production increased 1,166 bbls., largely due to a 5,500-bbl. gain in the Church-Fields-McElroy Pool of Crane County, because Pecos County's output was about the same as last week, and Winkler County dropped off about 6,500 bbls. The total production of the entire district averaged 267,068 bbls., compared with 265,902 bbls. last week and 271,619 bbls. two weeks ago.

So far, the Winkler County wells which are making water are confined to two groups of wells centering around the center of Section 29, Block B-5, and around the discovery well in the SE cor. of Section 42, same block. The outstanding development during the past week was the increase of the water content in Magnolia Petroleum Co.'s No. 2 Hendrick, SW cor. W half, Section 29, as a result of deeper drilling. This well started flowing about 10 per cent water December 15 and increased to 50 per cent last week (1,200 bbls fluid with 515 bbls. pipe line oil.) On December 28, it was deepened 6 feet to total depth of 2,961 feet and the water increased to 90 per cent. Top of pay in this well was 2,865 feet. It was pinched in to 500 bbls. but opened up again and Sunday treated out 735 bbls. of clean oil.

Atlantic Oil Producing Co.'s west offset to it, No. 1 Hendrick-D, started making water December 26. The next day it flowed 2,841 bbls. and showed 2 per cent water. On December 28 it made 2,832 bbls. and again made 2 per cent. Sunday's gauge on this well was 2,756 bbls. of fluid and the water had increased to 5 per cent.

Landreth Production Corp. and Roxana Petroleum Corp.'s No. 4 Hendrick-A, south offset to Atlantic's No. 1-D, also began making water on the twenty-eighth This well was completed December 24 for 4,100 bbls. at 2,930-88 feet. On December 29 it was flowing 3,817 bbls. of fluid with 4 per cent water, but was reported later to have increased to 7 per cent.

Humble Oil & Refining Co.'s No. 1 Hendrick-B, east offset to Landreth & Roxana's No. 4, and south offset to Magnolia Petroleum Co.'s No. 2, first showed water December 27, making 2,600 bbls. of fluid with 10 per cent water content. The next day it was pinched in to 600 bbls. and showed 15 per cent water. Sunday it flowed 1,977 bbls., 15 per cent of which was water.

In Discovery Area

In the discovery area, little chance has been noted from last week's report. The original Westbrook well, now Southern Crude Oil Purchasing Co.'s No. 1, Tract 67 Hedrick-A, in the SE cor. of Section 42, Block B-5, is making about 3 per cent water with 290 bbls. of oil. This well has been showing about 1 per cent cut for several months.

Pure Oil Co.'s east offset to it, No. 1 Hendrick-A, which started cutting December 23, is flowing 40 bbls. an hour and has increased to 75 per cent water.

Gulf Production Co.'s No. 1 Hendrick, south offset to the Pure well, is still shut down pending completion of treating apparatus. The last report on it showed 6 per cent water and 48 per cent b.s. Gulf's No. 3 Hendrick, south of No. 1, made 447 bbls., pinched, and showed only .2 per cent water, although it is on practically the identical contour line which runs through No. 1, and was drilled nearly 100 feet deeper.

Southern Crude's No. 1 Hendrick-C, the fourth well around this corner, is cleaning out at 2,988 feet. The water content is not known but it made a little. Independent Oil & Gas Co.'s No. 1 Hendrick, west of the discovery, is shut down. It was drilled down to the water level some months ago and plugged back, but has always made a little water with a small quantity of oil.

Three other wells are showing a very small percentage of water and will have to be added to the list because the quantity may increase at any time, even though it is small now. Atlantic's No. 1 Hendrick-A, in the NW cor. E half SW of Section 34, flowed 2,710 bbls. at latest report with .2 per cent water. This is one of the highest tests, structurally, to be affected so far, having topped the lime 365 feet above sea level.

Magnolia Petroleum Co.'s No. 1 Hendrick, NW cor. W half NE, Section 29, Block B-5, is the highest one to show water intrusion. December 29 it made 2,750 bbls. and showed .2 per cent water.

Humble Oil & Refining Co.'s No. 3 Hendrick-B, one-half mile east of No. 1-B, made 2,701 bbls., partially pinched, and had .2 per cent water to its credit.

Thirteen Affected

That makes a total of 13 producers which are now affected to a greater or less degree. It cannot be said that the companies operating in this field view this situation with alarm because there are various theories regarding the encroachment of edge and bottom waters in the West Texas fields. Anyone familiar with the McCamey district of Upton County knows that there is no such thing as a water table in that area. And it begins to appear as though the same holds true in the Hendrick Pool. Water in such quantities as those enumerated above, however, naturally causes considerable uneasiness and has moved some observers to revise their figures of ultimate yield downward. There is little doubt, however, that the Hendrick Pool will produce vast quantities of oil in spite of the water, and some believe that the water will help to produce it.

Roxana Petroleum Corp.'s No. 1 Hendrick-C, in the NE cor. NW of Section 29, just a half mile north of the southern water area, has not been affected. It produced 2,480 bbls. on a 1-inch choke December 29, and the next day made 2,520 bbls. through a seven-eighths inch aperture. This is the well which flowed 1,320 bbls. the first hour and was rated good for probably 25,000 or 30,000 bbls. Top of the pay and total depth is 2,885 feet, and the lime was topped about 330 feet above sea level.

A peculiarity of this field is noted in the north offset to this big well. Atlantic Oil Producing Co.'s No. 2 Hendrick-A, SE cor. SW Section 34, was drilling at 2,970 feet with no showing of oil. The surface elevations are just 5 feet apart, Atlantic's No. 2 being 2,819 feet, so that it is nearly 100 feet deeper than Roxana's No. 1-C and has not yet found any oil This situation is a corrolary to that in Section 4, Block B-12, on the southern edge of the field, where Southern Crude's No. 1, Tract 88 Hendrick-B, is still producing 5,027 bbls. and has made more than 600,000 bbls. to date, but has offsets on the north and east (between it and the field) which are practically dry.

Nearly all of the water wells are situated on practically the same contour line.

WATER REPORT—HENDRICK POOL, WINKLER COUNTY

No. Name, Company—	Sec.	Blk.	Descrip.	Elev. Top Lime	Top Pay and T.D.	Present Prod'n. and Water
Atlantic: 1 Hendrick-A	34	B-5	NW NE SW	365	2,826-3,013	2,710 0.2% b.s.
Atlantic: 1 Hendrick-D	29	B-5	SE cor. NW	...	-3,015	2,915 3% w., 4% b.s.
Gulf: 1 Hendrick	34	B-5	NW cor.	286	2,824-2,845	Shut in; 6% w., 48% b.s.
Gulf: 3 Hendrick	34	B-5	SW NW NW	285	-2,950	447 pinched 0.2% w.
Humble: 1 Hendrick-B	29	B-5	NW cor. SE	246	2,936-2,968	Shut in; 3% w., 12% b.s.
Humble: 3 Hendrick-B	29	B-5	NE cor. SE	225	3,018-3,026	2,701 pinched 0.2% w.
Landreth: 4 Hendrick-A	29	B-5	NE cor. SW	215	-2,988	3,817 4% w.
Magnolia: 1 Hendrick	29	B-5	NW cor. NE	385	-2,935	2,750 0.2% w.
Magnolia: 2 Hendrick	29	B-5	SW cor. NE	...	2,865-2,961	500 pinched 90% w.
Southern Crude: 1 T-67-A	42	B-5	SE cor.	149	2,997-3,071	265 3% w.
Southern Crude: 1 T-67-C	33	B-5	NE cor.	218	-2,988	Cleaning out.
The Texas Company: 1 Hendrick-A	41	B-5	SW cor.	209	2,837-2,838	960 75% w.
Independent: 1 Hendrick	42	B-5	SW SE SE	104	3,049-3,093	Shut in.

WILDCAT OPERATIONS IN WEST TEXAS

Week ending December 31, 1927

Company, farm and location—	Remarks—
ANDREWS COUNTY	
George B. Calvin's (was Calvin & Belt's) No. 1 Ratliff & Bedford, C NE Sec. 16, Blk. A-54	Hole full fresh water 1,055 ft.; top salt 1,610 ft.; shut down 4,003 ft.
J. S. Cosden's No. 1 Ratliff & Bedford, C SE Sec. 8, Blk. 73, Public School Land	Top salt 1,585 ft.; shut down 4,150 ft.
Deep Rock Oil Co.'s No. 1 W. J. Harris, C SE Sec. 12, Blk. A-46, Public School Land, elev. 3,167 ft.	Hole full fresh water 1,050 ft.; shut down 1,260 ft.
B. B. McKennon's (was Neff et al's) No. 1 J. S. Means, C SE Sec. 12, Blk. A-35, Public School Land	Set 8-in. 1,580 ft.; drlg. 1,620 ft.
A. G. Carter & Zweifel's No. 1 Cowden, C SE Sec. 18, Blk. A-52, Public School Land Sur., elev. 3,156 ft.	Top salt 1,375 ft.; encountered pocket of air 3,635 ft.; shut down 4,990 ft.
BORDEN COUNTY	
Marland Oil Co.'s No. 1 G. E. McDavid, C SW Sec. 156 Blk. 25, H. & T. C. Sur., elev. 2,310 ft.	Total depth 1,330 ft.; mudding off water 1,305-25 ft.
BREWSTER COUNTY	
Cady & Keller's No. 1 Decies	Rig on ground.
Cowden & Bowser's No. 1 Jackson & Harmon	Drlg. 600 ft.
J. M. Hickey's No. 1 Jackson & Harmon, NE cor. Sec. 182, Blk. 9, G. H. & S. A. Sur.	Drlg. 710 ft.
Mid-Kansas O. & G. Co.'s No. 1 Turney, Sec. 77, Blk. 213, T. & St. L. Sur.	Drlg. 2,600 ft.
Reese & White's No. 1 Kimbale, C NE Sec. 204, Blk. 9 G. H. & S. A. Sur.	Shut down for underreamer 1,306 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 mi. S of Alpine	Drlg. 1,169 ft.
Wilcox & Anderson's No. 1 Gage, Sec. 3, Blk. 300, T. C. R. R. Sur.	Drlg. 1,901 ft.
COKE COUNTY	
W. H. Brown et al's No. 1 W. L. Foster, SE cor. Sec. 142, Blk. 2, H. & T. C. Sur., elev. 2,222 ft	Shut down 2,250 ft.
Danciger O. & R. Co.'s No. 1 Mrs. Byrnes, Clinton Sur.	Drlg. 3,250 ft.
Lipan Oil Co.'s No. 1 S. M. Conner, Sec. 71, Blk. 2, H. & T. C. Sur.	Show oil 1,224-34 ft.; shut down lime 3,317 ft.
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H. & T. C. Sur., elev. 2,750 ft.	Total depth 2,236 ft.; shut down.
CONCHO COUNTY	
Parks & Lawson's No. 1 Schultz	Show oil 925 ft.; shot with 40 and 50 qts.; no results; shut down 1,500 ft.
The Exploration Co.'s No. 1 Hartgrove, Blk. 240, J. Schouch Sur. elev. 1,718 ft.	Set 10-in. 760 ft.; shut down 980 ft.
CRANE COUNTY	
Crane Dev. Co.'s No. 1 J. R. Mosley, S cor. Sec. 18, Blk. 6, H. & T. C. Sur.	Drlg. 910 ft.
Gulf Prod. Co.'s No. 3 W. N. Waddell, SE cor. NE Sec. 3, Blk. B-25, Public School Land	Top salt 1,165 ft.; drlg. 1,640 ft.
J. K. Hughes Dev. Co.'s No. 1 State Bank Commission, CSL Sec. 18, Blk. 4, H. & T. C. Sur.	Location.
Humble O. & R. Co.'s No. 1 University-B	Drlg. 350 ft.
Independent O. & G. Co.'s No. 2 University-B	Drlg. 1,100 ft.
CROCKETT COUNTY	
George Anderson and Marland Oil Co.'s No. 1 University	Hole full sulphur water 1,800 ft.; ½ bailer oil 2,240 ft.; ⅛ bailer sulphur water per hour 2,475 ft.; shut down 2,631 ft.
V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Sec. 4, Blk. 2, I. & G. N. Sur.	Shut down 2,110 ft.
Corbett & Gill's No. 1 University	Top salt 855 ft.; smell gas 1,800 ft.; hole full sulphur water 1,985-90 ft.; shut down 2,315 ft.
J. S. Cosden, Inc., No. 1 Paul Perner, SW cor. Sec. 26, Blk. 2, I. & G. N. Sur.	Shut down 595 ft. for 15-in. pipe.
James Kelly et al's (was Corbett & Gill's) No. 1 Todd, C NE Sec. 43, Blk. WX, G. C. & S. F. Sur.	Top salt 993 ft.; show oil 1,948 ft.; 700 ft. sulphur water in hole 2,450 ft.; total depth 2,605 ft.; plugged back to 1,948 ft. and shot 120 qts. 1,909-45 ft.; hole filled 250 ft. with water with slight scum of oil.
Van McPhail's No. 1 George Thompson	Location.
Van McPhail's et al's No. 1 George Thompson	Location.
Magnolia Pet. Co.'s No. 2 Shannon	Show oil 2,385-90 and 2,992 ft.; total depth 4,100 ft.; fish. 20 joints 8-in. casing.

(Continued on Page 141)

The elevations at which these wells topped the lime range from 104 feet above sea level in the Independent producer on the west, to 286 feet in Gulf's No. 1 Hendrick, except for these mentioned previously which are showing only negligible quantities of water. The Hendrick structure runs up to 688 feet above sea level on the Republic Production Co.'s "B" lease in the E half of the SE of Section 41, Block B-5.

One theory regarding the water intrusion is that the fluid is migrating up fissures or cracks which are believed to exist, in fact, practically known to exist in the field. Drilling wells are continually losing their rotary returns at various depths and it is thought that due to these small faults the water will be found at irregular depths in the lime. Some wells may remain free of water for long periods as in the case of the big Southern Crude producer in Section 4, previously mentioned.

New Pipe Lines

Every week brings new announcement of pipe lines in the Hendrick Pool. Landreth Production Corp. has ordered pipe for a 6-inch screwed carrier which will run from the company's leases in the field to a 40-car loading rack on the Texas & Pacific just west of Monahans in Ward County. Site for the rack and tank farm has been purchased in Section 80, Block A, G. M. M. & A. Survey, between The Texas Company's site on the west and the Humble's on the east. The latter is located in Section 61. Landreth will erect some tanks at the loading rack but has not yet decided definitely the number or size. The line is to be in operation by February 1.

Humble's 50-car loading rack has been completed and its 8-inch line is also ready to run oil.

Shell Pipe Line Co. (Roxana) has nearly completed its second 6-inch line from the pool to its loading rack near Monahans.

Two new lines are being surveyed, one by The Texas Company and the other by Texon Oil & Land Co. The former will be an 8-inch and will probably be built as soon as titles on land sold by Pure Oil Co. to The Texas Company recently have been approved. The latter is a 6-inch line and will run from Texon's lease in the field to an 80-car loading rack on the Texas & Pacific about 3 miles east of Pyote.

The Atlantic line from the Hendrick Pool to Midland has been completed for about 45 miles. It is being welded in five-joint lengths.

ESTIMATED DAILY AVERAGE PRODUCTION WEST TEXAS

Week ending December 31, 1927

West Texas—	
Big Lake Field	23,366
Crane County	108,579
Crockett County	3,872
Ector County	12
Glasscock County	S. D.
Howard County	6,565
Jones County	1,567
Loving County	80
Mitchell County	3,387
Pecos County	45,735
Runnels County	85
Scurry County	45
Upton County	18,009
Winkler County	55,766
Total West Texas	267,068
Total last week	265,902
Increase	1,166

Water in Crane County

The water situation in Crane County is not improving to any extent. Eastland Oil Co.'s No. 7 University was making 46 per cent water and 7 per cent b.s., according to a report one day last week. This was the highest percentage on the lease, however, No. 1 having made .2 per cent; No. 2, 1 per cent water and 4 per cent b.s.; No. 3, 4 and 5 each, .1 per cent; No. 6, 9 per cent water and 4 per cent b.s.; No. 8, no water and 9 per cent b.s.

Practically all wells on Simms and Atlantic's "A" and "D" leases were averaging about one-half of 1 per cent water. Same companies' No. 4 University-C made 38 per cent water, No. 5 made 40 per cent and No. 8 made 2 per cent.

Magnolia Petroleum Co.'s No. 7 University-Hardwicke made 40 per cent water. Tidal Oil Co.'s No. 3 University-I was cutting 14 per cent water and b.s. and No. 8 on the same lease was making 1 per cent b.s. All other wells on the "I" lease were making about one-half of 1 per cent. Tidal's "F" lease is showing water in very small percentages, most of the wells having about one-half of 1 per cent. No. 8 University-F, however, shows 1½ per cent.

Humble Pipe Line Co. is reported to be offering a three-year contract to some producers in the Church-Fields Pool and has notified some that connection would be withdrawn January 1. Pecos Oil Co. is preparing to handle its oil by erecting six new 55,000-bbl. tanks. It has about 525,000 bbls. in storage now and has a production of approximately 4,700 bbls. daily from 14 wells, with two other tests drilling.

The Shell Pipe Line Co. is installing a booster station 4 miles west of the Church-Fields Pool and may handle some of the Pecos Oil Co.'s output.

Howard County's greatest producing well is still going strong and the activity going on around it is assuming major proportions. This well is Magnolia Petroleum Co.'s No. 1 Dora Roberts. Late last week it was flowing 3,030 bbls., open at total depth of 2,990 feet.

Owen & Sloan's No. 2 Dora Roberts in the SE, Section 136, Block 29, Howard County, had 2,500 feet of oil in the hole at 2,570-92 feet and swabbed 160 bbls. the first 1½ hours. This swabbing lowered the fluid to 800 feet.

EDITORIAL

A BETTER YEAR

(Continued from Page 36)

sought through an aroused determination to deal with it by co-operation.

The industry is throwing away millions every year through duplications of outlets and unnecessary competition that does not benefit the public a cent.

The prospect that something may at last be accomplished towards remedying this situation is another encouraging feature for 1928.

Overproduction of oil and multiplication of distributing outlets, mistaking volume for profit, are two "delusions of grandeur" that have plagued the industry, leading it so often to drop the bone it was sure of to grab at the shadow.

With every indication pointing to the biggest demand for petroleum products this year it has ever had the industry can face 1928 with confidence if it will profit by the lessons of experience. There is every sign it is prepared to do so.

Supplying that demand will provide profitable occupation for everybody in the industry. There will be more than enough to go around if all work together and play fair.

The New Year will be what we choose to make it. It ought to see the industry prosperous and stabilized on a firmer foundation than it has ever experienced.

Late News from the Fields

OKLAHOMA

Continued cold weather caused the Greater Seminole Field to register a steady decline over the start of the new year. The zero temperature which was recorded rendered the output of the swabbing wells negligible, and practically all drilling operations were suspended. The field is now approaching the 300,000-bbl. figure once more.

For the first three days of the new year, the production by pools was as follows:

Pools—	Jan. 1	Jan. 2	Jan. 3
Little River	35,779	34,648	37,273
Bowlegs	102,541	102,085	104,394
Earlsboro	121,912	117,009	124,303
Seminole	54,078	52,752	52,633
Searight	19,450	19,934	20,083
*Totals	333,760	326,428	338,686

*From 1,063 wells.

There were several dry holes to inaugurate the new year, the majority of them in the Little River Field which added to the disappointments already experienced in that area. The Indian Territory Illuminating Oil Co.'s No. 1 Marshall, a wildcat well in Section 32-7-7, found a hole full of water in the Wilcox sand 4,659-88 feet. The Prairie Oil & Gas Co.'s No. 2 Dungan, in Section 35-8-6, found the second Wilcox full of water from a depth of 4,399-4,418 feet and will be abandoned. North of the discovery well, the Mid-Continent Petroleum Corp.'s No. 4 Wadsworth, NE cor. SW SW, Section 35-8-6, also was barren in the lower Wilcox sand from 4,278-80 feet, with a hole full of water and will be plugged. In the north end of the Little River Field, the Phillips Petroleum Co. and W. B. Pine's No. 3 Pottey, NE cor. SW NE, Section 35-8-6, has 3,000,000 feet of gas in the Sylvan shale found 3,917-20 feet. To the northeast of Little River, the Shaffer Oil & Refining Co.'s No. 1 Narcome, SW cor. NE, Section 36-8-6, had the Sylvan shale 4,570 feet, and the Viola lime 4,630 feet.

A couple of light wells failed to contribute very much to the output; Sinclair Oil & Gas Co.'s No. 3 Cumsey, NW cor. SW NE, Section 10-8-6, has 1,000 feet of oil in the hole from the Simpson sand 4,082-84 feet, and will be drilled on down to the Wilcox sand. The Gypsy Oil Co.'s No. 3 Pottey, SW cor. NE SW, Section 35-8-6, is swabbing 40 bbls. from sand 4,665-73 feet.

About the only active drilling operation in the old 9-6 or Seminole City Pool is the Magnolia Petroleum Co.'s No. 1 Stevens, SE cor. NW, Section 36-9-6, which had the Wilcox sand 4,215-45 feet with a show of salt water.

In Osage County, the Kewanee Oil & Gas Co. completed two producers in the NE, Section 3-26-6, on the southeast edge of the Burbank Field; No. 7 had the first oil at 2,768 feet, and the pay sand at 2,829-38 feet and made 246 bbls. the first 24 hours by natural flow; No. 8 had the first oil 2,745 feet, and the pay, 2,751-2,815 feet, and made 320 bbls. the first 15 hours. Both of these wells are producing from the regular Burbank sand. The Prairie Oil & Gas Co.'s No. 6, SW cor. NE NE, Section 20-27-6, is drilling in the sand found 2,918-26 feet and has 800 feet of oil in the hole.

In the Lovell region of Kingfisher County, where the mile-and-a-half deep drilling is under way, the Roxana Petroleum Corp.'s No. 1 Stephens, SW cor. SW, Section 29-19-4w, will be plugged back from a total depth of 6,110 feet, in an effort to save the production which was found above. It is estimated as a rather small well.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Jan. 3.—Humble's No. 2 Flato, in Kingsville Field, Kleberg County, gauged 606 bbls. of oil in steel and 150 bbls. in earthen storage in 18 hours with about the same amount of water. For two years the well pumped 15 bbls. daily at 2,930 feet when it sanded up. In cleaning out the big flow started believed to come from sand above at 2,700 feet. It is the only well in the field in that sand.

WINKLER COUNTY, TEXAS

FORT WORTH, Tex., Jan. 3.—Water in two Winkler County wells decreased somewhat yesterday. Atlantic's No. 1 Hendrick-D, Section 29, Block B-5, flowed 2,612 bbls. plus 2½ per cent water compared with 2,756 bbls. plus 5 per cent Sunday. Humble Oil & Refining Co.'s No. 1 University-B, same section,

(Continued on Page 139)

WEST TEXAS COMPLETIONS

Crane County

Tidal Oil Co.'s No. 3 University-G made 200 bbls. initially at 2,872-75 feet.

Crockett County

Kelly and others' No. 1 Todd was dry and abandoned at 2,605 feet after a 120-quart shot at 1,909-45 feet failed to produce results.

Howard County

Magnolia Petroleum Co.'s No. 8 Mary Chalk had the pay at 1,633-53 feet and was shot with 40 quarts at 1,634-54 feet, making 30 bbls. Marland Oil Co.'s No. 6 Clay-A was swabbing 70 bbls. from pay at 1,820-37 feet and No. 7 Clay-A was swabbing 54 bbls. Vitek Oil Co.'s No. 1 Clay was shot with 120 quarts at 1,630-1,786 feet, and made 150 bbls. initially was producing 48 bbls. daily this week.

Mitchell County

The California Co.'s No. 7 Adams, Lease 2, was good for 85 bbls. after a 300-quart shot at 2,930-3,082 feet. Total depth is 3,090 feet.

Pecos County

Cummings and others' No. 1 Blackstone & Slaughter was dry and abandoned at 2,528 feet. McMan and Marland's No. 13 Yates flowed 50 bbls. an hour at 1,322-1,450 feet; No. 14 Yates made 65 bbls. an hour at 1,350-1,450 feet. Mid-Kansas and Transcontinental's No. 17 Yates-B flowed 965 bbls. in one hour at 1,010-75 feet and was pinched to 2,471 bbls. in 21 hours. Same companies' No. 9 Yates-C was good for 515 bbls. in eight hours at 915-60 feet. Roxana Petroleum Corp.'s No. 4 Tippet flowed 700 bbls. per hour at 1,253-1,425 feet.

Runnels County

Owenwood Oil Corp. abandoned the location for No. 1 Fowler.

Taylor County

Sanger Oil Co.'s No. 1 Brown was dry and plugged at 3,510 feet.

Winkler County

Atlantic Oil Producing Co.'s No. 1 Hendrick-D topped the second pay at 2,870 feet and at total depth of 3,015 feet made 3,054 bbls. initially. Independent Oil & Gas Co.'s No. 2 Ida Hendrick was completed for 1,000 bbls. at 2,815-18 feet and has been pinched to 220 bbls. Magnolia Petroleum Co.'s No. 2 Hendrick made 3,230 bbls. initially at 2,955-61 feet. Roxana Petroleum Corp.'s No. 1 Hendrick-A was completed for 1,200 bbls. at 2,800-28 feet.

Southern Crude Oil Purchasing Co.'s No. 1 Tract-68-3-A Hendrick was shut in for 90,000,000 feet of gas at 2,740 feet. Same company's No. 2 Tract-88-C was good for 1,300 bbls. at 2,805-2,992 feet.

Panhandle Output in Further Decline

Drop of 2,715 Bbls. Daily Due to Weather. Revival of Old Well May Lead to Cleaning Out Program

By James H. Dameron
Staff Correspondent, Texas Panhandle

AMARILLO, Tex., Jan. 2.—Zero temperatures in the Texas Panhandle didn't help production, this week's daily average showing a slump of 2,715 bbls. daily. A further decline next week can also be expected because the full effect of the recent cold snap was not felt in the runs which figured in the current report. The 2,715-bbl. drop puts the daily average production down below the total capacity of the three trunk pipe lines which connect the Panhandle fields with the outside world, to say nothing of the local refinery capacity and the loading racks. The Humble, Gulf-Magnolia and Prairie pipe lines are rated at a total of 82,000 bbls. daily, while this week's average output was 80,235 bbls.

The new McCauley well in Gray County and the Bowers Pool in the same county furnished practically all of the interest in the Panhandle this week so far as field developments are concerned, although one of the oldest wells in the Hutchinson County Field provided an unusual performance.

This old well is Dixon Creek Oil Co.'s No. 1 Smith in Section 14, Block Y, which was drilled in nearly two years ago, in March of 1926. It had lately dropped to about 10 bbls. daily, so the owners ran a paraffin scraper in it and cleaned it out. On December 22 the production increased to 412 bbls. The next day it made 770 bbls. and jumped to 1,365 bbls. December 24. Its Christmas present to the owners amounted to 1,543 bbls. However, late last week it was back down to 623 bbls. and was showing 20 per cent water. As a result of this performance it is probable that a number of Panhandle producing wells will be cleaned out and reconditioned, especially on leases of the smaller companies.

Paraffined Up

H. C. McCauley and others' No. 1 Morse, in Section 2, Block 26, H. & G. N. Survey, which was reported last week flowing 20 bbls. an hour later, finally paraffined up to such an extent that it flowed only 3 bbls. hourly. It will be cleaned out and doubtless will be brought back to some extent and will probably make a good producer, but as it appears now it is estimated good for about 175 bbls. There is a good chance, however, that a field comparable to the Bowers Pool will be opened in this area.

The McCauley well is located 990 feet from the north line and 330 feet from the west line of Section 2, Block 26. The owners made a location this week for their No. 2 Morse, 330 feet each way out of the SE cor. N half of Section 3, same block. This is about a quarter of a mile south and a location west of No. 1.

The only other location made this week in Gray County was staked by the Empire Gas & Fuel Co. for its No. 1 Bender in the SE cor of Section 164, Block 3, I. & G. N. Survey.

The Amarillo Oil Co. made a location for No. 2 Fuqua in Potter County, the description being the center of the NW of Section 18, Block 6, B. S. & F. Survey. The same company also located No. 1 Masterson-K in the center of the SW of Section 85, Block 18, D. & P. R. R. Survey, and has a rig on the ground.

Lamb County gained a new well when the Spade Oil Co. spudded No. 1 Andrews this week. This test is about 5 miles northeast of Littlefield, being described as 1,085 feet from the north line and 200 feet from the east line of Labor 23, League 643.

In Sherman County, the Phillips Petroleum Co.'s No. 1 Price & Fuqua had some salt water at 3,535 feet and is lowering the 6-inch casing to shut it off.

Bowers Area Erratic

The Bowers area of Gray County is proving quite as erratic as the other granite wash pools found in the Panhandle. Some of the wel's show wonderful production at this time while offsets are not panning out quite as well. The three producers on the Danciger Oil & Refining Co.'s lease in the NW of Section 88, Block B-2, were making 4,950 bbls. this week compared with 4,362 bbls. last week. The Delaney well in the NW cor. E half SW of the same section, however, dropped from 4,181 bbls. to 3,150 bbls. and when it was deepened 3 feet it went dead, with only 1,500 feet of oil and an equal amount of water in the hole. Delaney and others' No. 2 Jackson was drilled to 3,054 feet, or 43 feet below sea level, where it had 1,000 feet of salt water in the hole. It was plugged back to 3,025 feet and shot with 70 quarts from 2,977-3,025 feet but without result. This well swabbed 50 bbls. from 2,850-77 feet. Skelly Oil Co.'s No. 1 Jackson in the NW cor. SE of the same section, also swabbed about 50 bbls. at 3,012 feet, which is a little below sea level.

Danciger Oil & Refining Co.'s No. 4 Jackson is still making about 234 bbls. at total depth of 3,034 feet.

West of Pampa, the Guernsey Oil Co.'s No. 1 B. E. McKinney, located 1,980 feet from the west line and 800 feet from the south line of Section 163, Block 3, had 15 000,000 feet of gas at 3,026-3,110 feet.

Gulf Production Co.'s No. 3 Bowers, SE cor. W half Section 89, Block B-2, in the Bowers Pool, had 5,000,000 feet of gas at 2,750-80 feet.

McMan Oil & Gas Co. is rigging up No. 1 Osborne, in the NE cor. W half SE Section 86, Block 3, I. & G. N. Survey.

There were no completions in the Panhandle during the past week.

RANGER DISTRICT COMPLETIONS

Callahan County

Kelly and others' No. 1 Radford was temporarily abandoned at 650 feet. Tollett & Graham's No. 2 Alvord was making 15,000,000 feet of gas at 985-95 feet but was not completed.

Coleman County

Owens abandoned the location for No. 1 Seale. Canary and others' No. 1 Morris was shut down at 2,264 feet and flowing 5,000,000 feet of gas.

Brown County

Cranfill & Reynolds' No. 12 Smith was completed for 20 bbls. after two shots of 4 quarts each and one of 8 quarts. Sand was at 1,339-51 feet, total depth being 1,354 feet. Daniels and others' No. 1 Allcorn flowed 25 bbls. of 40.2 gravity oil from sand at 1,125-32 feet but was not completed.

Nichols and others abandoned their No. 1 Watson at 1,589 feet. West Texas Land Co.'s No. 1 Gwathney was estimated good for 15 bbls. of oil and 35 bbls. of water after a shot of 60 quarts in sand at 1,485-97 feet.

In Eastland County, H. H. Adams and others' No. 4 Grove was flowing 200 bbls. at 3,925-30 feet, total depth 3,963 feet, but was not completed. Parsons and others' No. 3 Blackwell was estimated good for 400 bbls. of oil and 3,000,000 feet of gas at 2,990-93 feet. Mays and others' No. 1 Nivers was estimated a 40-bbl. well at 1,381-1,400 feet and was shut down for orders.

In Brown County, W. T. Daniels and others' No. 1 H. L. Alcorn, in the NE part of the Roland Honeycutt Survey No. 623, topped sand at 1,125 feet and drilled to 1,132 feet. There was no increase in oil but the gas pressure increased and the well made 25 bbls. of 43 gravity oil. This production is from the Fry horizon. The only new location near it was made by the Ray Oil Co., offsetting the producer to the east.

Daily Production

Following is the daily average production by counties:

County—	Bbls.	Loss
Carson	7,630	90
Gray	18,555	435
Hutchinson	52,740	2,130
Potter	30	0
Moore	0	0
Wheeler	1,280	20
Total	80,235	2,715
Wichita Falls district—		
Archer County	21,155	
Baylor County	76	
Clay County	553	
Cooke County	4,632	
Jack County	1,476	
Montague County	9,529	
Throckmorton County	1,084	
Wichita County	27,436	
Wilbarger County	10,334	
Young County	11,599	
Total Wichita Falls district	87,865	
Total last week	88,154	
Decrease		289
Ranger district—		
Brown County	17,060	
Callahan County	4,110	
Coleman County	1,240	
Comanche County	1,310	
Palo Pinto County	450	
Ranger	8,165	
Shackelford County	5,480	
Stephens County	8,710	
Total Ranger district	46,525	
Total last week	45,981	
Decrease		544

WILDCAT OPERATIONS IN PANHANDLE

Week Ending December 31, 1927

ARMSTRONG COUNTY

Company, Well, Farm, Name, Section and Block—	Remarks—
United Oil & Trust Co.'s No. 1 J. P. Reck, Sec. 162, Blk. 4, H. & G. N. Sur.	Fish. for bit, 2,260 ft.

BAILEY COUNTY

Gibson Oil Co. et al's No. 1 Webb Miller, NE cor. Sec. 15, League 186, Swisher County school land	Rig.
Humble O. & R. Co.'s No. 1 W. H. Fuqua, C E ½, Sec. 117, Blk. A, Melvin, Blum & Blum Sur.	U.R. 8-in., 2,200 ft.

BRISCOE COUNTY

C. S. Rice's No. 1 J. C. Anderson, SE cor. NW NW, Sec. 22, Blk. B-3, B. S. & F. Sur.	S.D., 1,620 ft.

CARSON COUNTY

Amatex Dev. Co.'s No. 1 E. S. Polling, Sec. 22, Blk. 2-Y	T.A., 2,110 ft.
Marston Oil Co.'s No. 1 J. L. Noel	S.D., 3,064 ft.
Navajo Oil Co.'s No. 1 E. S. Polling, Sec. 22, Blk. 2-Y	Set. 6-in., 2,496 ft; S.D., 2,712 ft.
The Texas Company's No. 2 C. R. Garner	25,000,000 ft. gas, 2,300-25 ft; rig burned.
The Texas Company's No. 1 Chas. Kalka, C NW, Sec. 43, Blk 4, I. & G. N. Sur.	First gas, 2,300 ft; 30,000,000 ft. gas, 2,515 ft.
Willis et al's No. 1 Burnett est., C SE SW NW, Sec. 111, Blk. 5	T.D., 3,050 ft; C.O.; show oil, 3,-010 ft; show wtr., 3,040 ft; in lime; drlg., 3,102 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor. Sec. 78, Blk. M-17, B. S. & F. Sur.	Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S. K. & K. Sur.	S.D., 510 ft. for casing.

CHILDRESS COUNTY

Hoover & Calloway's No. 1 O. L. Tucker, Sec. 736, Haggard Sur.	Spudded and S.D.
C. L. Sloane et al's No. 1 B. P. Smith, Sur. 49, F. P. Knott lands	Set. 6-in. pipe, 2,902 ft; drlg., 3,-740 ft.

COTTLE COUNTY

Exploration Co.'s No. 1 Richards	Spudded and S.D.

DALLAM COUNTY

Wood Bros. et al's No. 1 Capitol Synd., Sec. 19, Blk. 17	Hole full wtr., 4,007-4,127 ft; T.D., 4,188 ft; S.D. until spring.
Marland Oil Co.'s No. 1 A. M. James, C SW W ½, Sec. 21, S. H. McElreath Sur.	S.D., 2,445 ft. for wtr.
Marland Oil Co. et al's No. 1 Capitol Synd., Sec. 36, Blk. 18, Capitol Synd. land	U.R. 6-in., 3,460 ft.

DONLEY COUNTY

A. T. Drlg. Co.'s No. 1 F. E. Harrington, Sec. 39, Blk. 3-C	1,200 ft. wtr., 3,115-22 ft; show gas, 3,140-60 ft; dry G.W., 3,-260-93 ft; S.D., 3,498 ft.

FLOYD COUNTY

Explta. Co.'s No. 1 S. H. Boone, C. C. H. Johnson Sur.	Spudded and S.D.
Explta. Co.'s No. 1 Land & Cattle Co.	S.D., 780 ft. for orders.
Hoffer Oil Corp.'s No. 1 Nelson	Spudded and S.D.

GRAY COUNTY

Archer Blake's No. 1 Turneaux, SW cor. Sec. 111, Blk. B-2	S.D., 255 ft.
Bay Shore Oil Co.'s No. 1 C. W. Bradford, Sec. 143, Blk. 2-B	T.D., 2,666 ft; S.L.M. shot with 10 qts. to loosen bit and 8-in collapsed; fishing.
Camel Oil Co.'s No. 1 B. E. McKinney	Rig.

(Continued on Page 82)

WASHINGTON LAWYER'S VIEW OF OIL SITUATION

WICHITA, Kans., Dec. 31.—Oil men here were interested in the visit of Peter Q. Nyce, secretary of the minerals sections of the American Bar Association, of Washington, D. C., to his partner, Chester I. Long, former United States Senator from Kansas and former president of the American Bar Association who is chairman of the committee appointed by the minerals section which named the association's three representative on the Committee of Nine which is to report on oil legislation to the Federal Oil Conservation Board.

"The chief trouble with the oil industry today is the mad scramble for drilling new wells," the Washington lawyer said. "Offset wells are a great problem. When territory is proven, the lease holders adjoining, quite naturally, sink wells to draw oil from under their neighbors land. That causes the original well owner to pump as fast as he can to get as much of the oil as possible before the offset wells pump it all out.

"The result is that every producer in the country who has such competition is working his pumps 24 hours a day and oil is being produced faster than we need it or can use it. At the same time there are 25 per cent more distributing stations in the country than are needed, so that once more we have a wastage which is hard both on the industry and the consumers."

Mr. Nyce planned to visit Bartlesville and Tulsa on business trips.

Automatic Control of Temperature

Promised That It Will Do Much to Help Keep Balance Sheet Out of the "Red." Possibilities Merely Touched

By F. M. Poole*

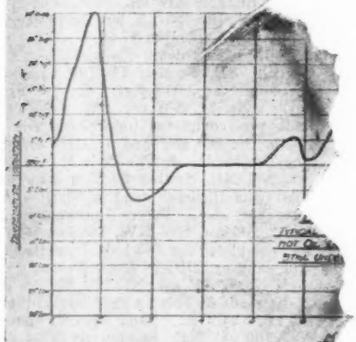
District Manager for the Brown Instrument Co.

To refiners, automatic temperature control is of vital interest. It will do much in the future toward helping keep balance sheets out of the "red"; its possibilities have merely been touched heretofore.

For purposes of consideration, I am separating the problem of temperature control into the application to the fuel supply to your furnace, whether it be a pipe still, cracking still, or lubricating unit, and to your fractionating towers; in other words, to the "input" and "output" of your plant.

Furnace Applications

In the past, when automatic temperature control has been applied to [illegible] has been of the "off and on" type:



This usually comprised a pyrometer actuated from a thermocouple, located either in the oil path or the furnace combustion chamber, which is made by means of a high and low contact in the instrument, to open or close the valve in the fuel supply to the burners. This means that the fuel valve was either in one position or the other. (This excludes the so-called thermometer air type controls which cannot be used to control from furnace temperatures, and only within a limited range from oil temperatures.) This type of control is similar to that used in other industries such as the heat treating. In such industries, this type of control is used with satisfaction. The reason is that the temperature changes required are usually marked and rapid, and the time required for treatment is relatively short. The "off and on" control, when applied to the oil industry, has done the work required but its adaptation has not been as complete as in other industries. Chart "A" shows such a control applied to a Jenkins pressure still furnace. Note that this is a record multiple type of instrument. [illegible] furnace. With a [illegible] two-record [illegible] only the [illegible] also balance [illegible] furnace.

Limitations Cited

Some of the limitations of "off and on" controls are:

1. If the thermocouple is located in the oil outlet, to keep the temperature of actuation within narrow limits, there is required considerable difference in adjustment between the open and closed positions of the valve. This means: (a) the furnace masonry and tubes are subjected to [illegible] cooling, which [illegible] long [illegible]

*Before Western Petroleum Refiners' Association at Wichita, Kans., October 11, 1927.

The danger of overheating a tube is material (especially [illegible] oil [illegible] furnace oil outlet temperature [illegible] a material [illegible] is due [illegible] purity of the [illegible] When [illegible]

This results oftentimes in an insufficient amount of air for the open position of the fuel valve, with the resulting increased deposit of soot on the tubes. Such increased soot deposit, as you all appreciate, means a decrease in the rate of heat transfer, resulting in waste of fuel.

Some of you gentlemen have seen "off and on" controls applied to furnaces or have them in your own plant. I have appreciated the limitations in value of such "off and on" controls. I have used them, principally, to [illegible] the human factor although you may have become what you proficient in controlling your still temperatures.

Evolution of Furnace Control

Is the evolution of furnace control to stop here?

In order that you may appreciate the possibilities and perhaps [illegible] controls, I have [illegible] scale, of automatic control on a Cross furnace. Graph No. 1 depicts the condition in the oil temperature still which is scheduled [illegible] 890 degrees. The curve follows this schedule [illegible] except at one point it is allowed to go from 890 degrees Fahrenheit to 920 degrees Fahrenheit. This temperature of 920 degrees Fahrenheit is well within the zone where excessive coke deposits begin. Note at one other point that the temperature is allowed to drop to 865 degrees. Such a drop in temperature [illegible] eliminating these ill effects of the human element. [illegible] efficiency that they can obtain a straight [illegible] furnace temperatures as they now appear on the market. What type of mechanical and electrical design in automatic control should you expect to eliminate the above limitations? What is the best method of controlling a furnace? Shall it be directly from the oil outlet thermocouple actuating the furnace fuel supply, shall it be from the furnace thermocouple actuating the furnace fuel supply or shall it be the combination of both?

Furnace Control

Based upon the observations from extensive tests and development work on automatic furnace control made during the past [illegible] years, it is my opinion that the most desirable furnace control would be made up as follows:

1. A control pyrometer actuated from thermocouples in the combustion chamber, which would vary the amount of fuel to the furnace burners to give a constant furnace temperature regardless of "throughput."

It is desirable to have an auxiliary control pyrometer actuated from the oil outlet temperature, or an intermediate point between the oil outlet and oil inlet. This should arbitrarily vary the charge to iron out small fluctuations in the oil outlet temperature. This is particularly desirable where it is impossible to maintain an absolute constant rate of charge because of the variable speeds of the charge pumps.

Varying the rate of charge to small fluctuations in the oil temperature, is suggested because [illegible] much more rapid [illegible] that in a pipe [illegible] and thermal [illegible] rate of charge [illegible] temperature [illegible]

[illegible] electrical design [illegible] above should [illegible] following characteristics:

[illegible] sensitivity.

[illegible] of fuel burners, at first [illegible] but in small increments [illegible] proportional to amount [illegible] temperature divergence from the control point.

[illegible] capacity of the instrument to "ease" adjustment at the instant temperature fluctuation stops and begins [illegible] toward the control point.

Means of adjusting such capacity to accede in accordance with the load in the unit being controlled.

A control having the above characteristics would approximate the best manual control of an intelligent operator with his hand constantly on the control valve and his eye on the pyrometer. There would be no alternate heating and cooling of the furnace masonry and tubes or an excessive soot deposit due to incomplete combustion. Fuel economy would be [illegible] maximum [illegible]

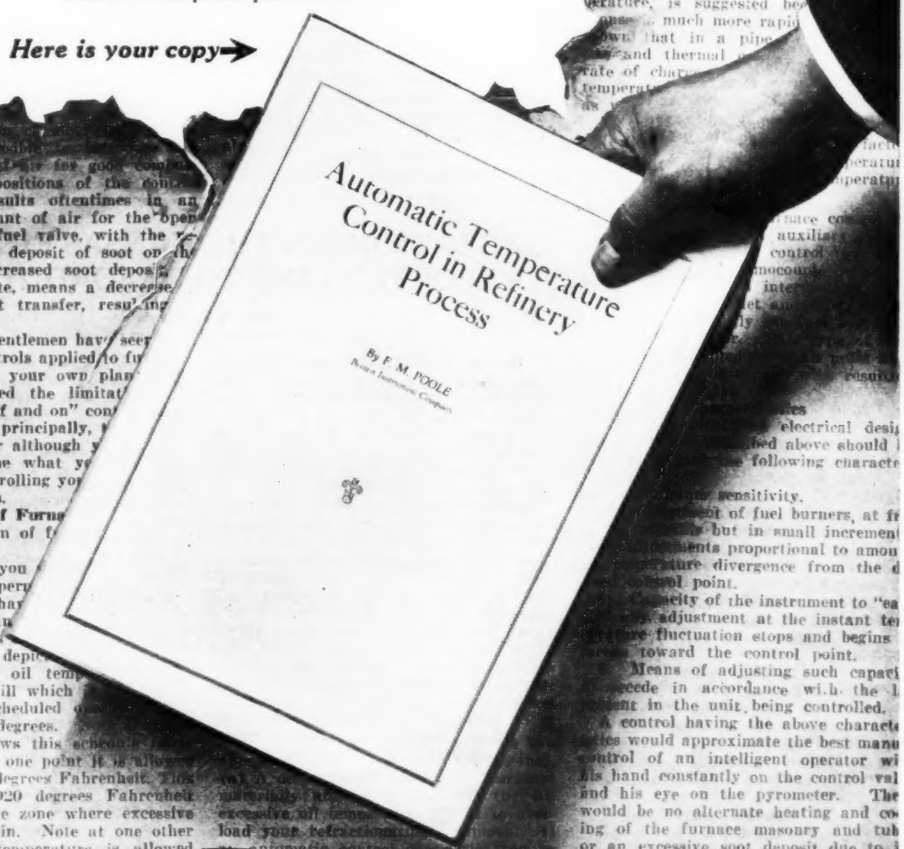
(Continued on Page 58)

An Article You Will Want to STUDY

Because of the great importance of its disclosures covering recent advances in the development of automatic temperature control equipment, and the remarkable results obtained in the control of refinery furnaces, pipe stills, cracking stills, lubricating units and fractionating towers, this article has commanded widespread attention. If you have not read this article, write for a copy and it will be sent to you promptly.

The Brown Instrument Company
4456 Wayne Avenue, Philadelphia, Pa.
Offices in 20 principal cities.

Here is your copy →



"To measure is to economize" —PASCAL

Brown Automatic Temperature Control

Cold Weather Causes Drop at Seminole

All Indications Point to Strict Adherence to Agreement to Curtail Drilling Until March 1

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The Greater Seminole Field registered another drop due to severe weather conditions during the last week of 1927, when the daily output declined to 352,950 bbls. from 1,062 wells. Zero weather again interfered with the output of wells which were being flowed by means of the air-gas lift. While the compressors and engines were amply protected by houses, the parts of the lines which were exposed to the elements became frozen, and necessitated a shutdown to thaw out.

The production by pools on Saturday, December 31, was as follows:

Little River	37,755
Bowlegs	105,665
Earlsboro	133,403
Seminole	55,533
Searight	20,594
Total barrels	352,950

During the past week, a threatened upset to the shut-down agreement was eliminated when a company having a lease in the Little River Field decided to postpone its drilling activity until later in 1928. Had this well been started, it is believed that at least 30 other operations would have been commenced. Perfect harmony now seems to prevail among the Seminole operators, and there is every reason to believe that the current shutdown agreement will encounter no more obstacles until it reaches its expiration on March 1.

Considering the immediate future of the Greater Seminole region, a decline must be anticipated if cold weather continues. Earlsboro has already displayed a sharp drop, and the part of the pool which has no water may be expected to remain practically constant for the time being. Just what the performance of the part of Earlsboro which is experiencing the intrusion of salt water will be is problematical. Bowlegs should register further declines within the next few weeks, while Seminole City and Searight should show a limited drop.

Caddo County

Moran and others' No. 2 Cutshall, SE cor. NW, Section 5-5-9w, is drilling at 1,833 feet. English Drilling Co.'s No. 3 Cutshall, NW cor. SE, Section 5-5-9w, is rigging up rotary tools.

Carter County

Roxana Petroleum Corp.'s No. 1 Carter, SE cor. SW SW, Section 14-1s-3w, is a rig. Magnolia Petroleum Co.'s No. 1 Tivis, NW cor. Section 20-1s-3w, has been abandoned at 4,100 feet.

Cherokee County

Atkinson and others' No. 1 fee, NW cor. Section 36-19-21, is dry and abandoned at 2,400 feet.

Comanche County

Jolly Ogg Oil Co. has a rotary rig up for No. 1 Sparlin, SE cor. NE, Section 24-3-10w.

Cotton County

Magnolia Petroleum Co.'s No. 1 Pex See, NE cor. SE, Section 30-1s-9w, has been completed for 7,000,000 feet of gas in sand at 2,167-81 feet. J. W. Ray's No. 1 Koehler, NW cor. SE, Section 22-2s-11w, is dry and abandoned at 2,212 feet.

Creek County

Independent Oil & Gas Co. has the rig on the ground for No. 9 Wolfe, SW cor. NW NE, Section 18-14-10, Hall-Donnelly Pool. The rig has been built for No. 8 Wolfe, NW cor. SW NE, Section 18-14-10. Irelan and others' No. 3 Inman, SW cor. Section 9-17-11, is spudding. Devonian Oil Co. made location for No. 2 Hawkins, SW cor. NE, Section 4-18-12. J. H. Markham, Jr., has the rig on the ground for No. 1-A Beesley, NE cor. Section 19-17-7.

Producers & Refiners Corp.'s No. 5 Harjo, NW cor. SE NE, Section 18-14-10, Hall Donnelly Pool, was completed for 320 bbls. in Wilcox sand at 3,414-34 feet. No. 2 Harjo, SW cor. NE SE, Section 18-14-10, was deepened to the Wilcox sand at 3,420-38 feet and plugged back to the Dutcher sand at 2,881-2,900 feet and completed for 10 bbls. Kennedy & Horner and others' No. 4 Tiger, CWL NW NW, Section 25-18-11, is dry and abandoned in Wilcox sand 2,290-2,311 feet. Dixie Oil Co.'s No. 1 Tankaney, SE cor. SW SE, Section 7-19-9, made 428 bbls. from Wilcox sand at 2,857-67 feet. Devonian Oil Co.'s No. 5 Bigpond, SE cor. NW NE, Section 36-15-7, made 40 bbls. after a 60-quart shot in sand at 2,447-71 feet. Gled Oil Co.'s No. 3 Knight, NW cor. NE NE NW, Section 24-19-8, was completed for 50 bbls. in sand at 2,257-90 feet. Silurian Oil Co.'s No. 26 Simpson, NE cor. SE SW, Section 8-18-7, was deepened from 2,495 feet to 2,543 feet and made 4 bbls. when put on the pump.

Garfield County

Sinclair Oil & Gas Co.'s No. 18 Mitcher, NE cor. NW SE NE, Section 36-22-4w, Garber area, is drilling at 418 feet. Champlin Refining Co.'s No. 1 Stoner, NW cor. SE, Section 24-24-3w, has been plugged at 2,745 feet. Sinclair Oil & Gas Co.'s No. 23 Hoy, C SW NE, has been completed for 65 bbls. in sand at 2,111-21 feet.

Grady County

Little Nick Oil Co.'s No. 3 McCaughtry, SE cor. NW NW, Section 35-5-8w, is drilling at 500 feet. Noble & Westerfelt made location for No. 5 McCaughtry, SE cor. NE NW, Section 35-5-8w.

Hughes County

Whitney and others' rig material is on the ground for No. 1 Moore, SE cor. SW, Section 17-5-9. Dixie Oil Co.'s No. 3 Cornelius, SE cor. SW SW, Section 17-8-10, was completed for 26,000,000 feet of gas in sand at 3,728-39 feet.

Kay County

Harris & Haun made location for No. 1 Austin, C SE NE, Section 17-29-1w. Harris & Haun's No. 1-A Tickle, SE cor. Section 25-29-1w, has been completed for 850,000 feet of gas in sand at 955-70 feet. Greer & Walters' No. 1 Skein, C SE SW, Section 19-29-1, is dry and abandoned at 1,535 feet. Wentz Oil Corp.'s No. 2 Country Club, SE cor. SW SW, Section 20-27-1w, has been shut in for 750,000 feet of gas in sand at 699-702 feet. Larutan Gas & Fuel Co.'s No. 2 Rembe, NE cor. NW NW, Section 29-27-1w, was completed for 500,000 feet of gas in sand at 706-11 feet.

Muskogee County

Decius & Garrett's machine is at the location for No. 1 Marshall, NW cor. SE, Section 27-14-16. W. A. Peterson's No. 7 James, SW cor. SE SE, Section 18-14-17, is rigging. E. J. Lambert's No. 1 Hutton, NE cor. SW, Section 22-13-15, is spudding.

Hillside Oil & Gas Co.'s No. 10 Sango, C SW SW, Section 28-15-15, made 15 bbls. from sand at 1,247-73 feet. Jack Summers' No 2 Beams, SW cor. NE NW, Section 28-15-16, is dry and abandoned at 1,804 feet. C. M. Bradley's No. 1 Townsite, CSL NE NE, Section 34-15-18, has been abandoned at 1,980 feet. E. J. Lambert's No. 2 Grayson, NE cor. SE, Section 22-13-15, is a dry hole at 1,700 feet.

Osage County

Delmar Oil Co. is building the rig for No. 1, CWL E half NW, Section 22-24-8. Lewis Gas Products Co. has the rig up for No. 4, SW cor. Section 2-26-6, Burbank Pool. The Prairie Oil & Gas Co. is rigging up No. 1, NE cor. Section 10-26-6. No. 2, SE cor. NE NE, Section 10-26-6, is also rigging up. Lewis Gas Products Co. has the rig up for No. 1, NW cor. SW, Section 2-26-6. The rig is also up for No. 2, SW cor. NW SW, Section 2-26-6. The rig has been built for No. 3, NW cor. SW SW, Section 2-26-6. Gypsy Oil Co. has the rig up for No. 9, SW cor. NE SE, Section 28-27-6. The rig for No. 10 has been built at the SE cor. NW SE, Section 28-27-6. Kewanee Oil & Gas Co. is building the rig for No. 7, NE cor. NW NE, Section 28-27-6. The rig for No. 8 is being built at SW cor. NW NE, Section 28-27-6. No. 9 is a rig under construction at SE cor. NW NE, Section 28-27-6. The rig for No. 10 is being built at NW cor. SW NE, Section 28-27-6. Phillips Petroleum Co. has the cellar dug for No. 6, SE cor. SW SE, Section 17-27-6. The cellar for No. 7 has been dug at NW cor. SE, Section 17-27-6.

Phillips Petroleum Co.'s No. 4, NW cor. SE SE, Section 17-27-6, has been abandoned at 3,010 feet. City of Pawhuska's No. 21, NW cor. SW, Section 25-26-8, was completed for 750,000 feet of gas in the Layton sand at 1,118-34 feet. The Prairie Oil & Gas Co.'s No. 4, NW cor. NE NE, Section 20-27-6, made 375 bbls. from Burbank sand at 2,907-55 feet after the shot. Peters Petroleum Co.'s No. 2, SE cor. SW NW, Section 26-25-9, was completed for 765 bbls. from Bartlesville sand at 2,107-70 feet. Devonian Oil Co.'s No. 3, SE cor. NE NE, Section 33-21-10, made 30 bbls. in the Cleveland sand at 1,510-34 feet. Sand Springs Home's No. 109, C NE, Section 28-20-10, has been shut in for 1,000,000 feet of gas in the Burgess sand at 2,380-81 feet.

Okfuskee County

Burke Greis' No. 3 Deer, C NE SW, Section 36-11-9, is making 14,000,000 feet of gas from the Gilcrease sand at 2,850-2,925 feet.

Okmulgee County

J. W. Sharpe and others' No. 5 Colbert, SE cor. NW, Section 16-14-14, is rigging. C. T. Smith's No. 10 Rentie, NE cor. SE SW, Section 18-14-15, is rigging. J. E. Wallace's No. 5 Colbert, C NW SE, Section 14-14-14, is a 50-bbl. well in sand at 986-1,008 feet.

Pawnee County

B. Swift's No. 1 Pounder, NW cor. SW NW, Section 33-20-9, is spudding. T. E. Mann and others' No. 1 Sinnett, NE cor. NW SE, Section 22-20-9, is making 3,000,000 feet of gas in the Burgess sand at 2,112-39 feet.

Pontotoc County

Texas Pacific Coal & Oil Co. is building the rig for No. 2 Hutcheon, SE cor. Section 19-5-8. Louisiana Oil Refining Co.'s No. 1 Perry, NE cor. NW, Section 20-5-8, was completed for 400 bbls. in sands at 2,448-80 feet and 2,480-2,570 feet. No. 4 McElroy, NE cor. SW SE, Section 17-5-8, Allen Pool, is a 250-bbl. well in sand at 2,532-65 feet. Homaokla Oil Co.'s No. 4 McCall, SE cor. SW NW, Section 17-5-8, has been completed for 257 bbls. in sand at 2,348-59 feet. Louisiana Oil Refining Co.'s No. 1 Reed, NE cor. Section 18-5-8, Allen Pool, made 604 bbls. from sand at 2,677-96 feet.

Sequoyah County

Citizens Gas Co.'s No. 1 Packard, SE cor. NE, Section 7-11-27, is spudding.

Stephens County

Beard & Cobb made location for No. 2 Wade, SW cor. NW NE, Section 11-2s-8w. Carter Oil Co.'s No. 4 Iserwood, SW cor. SE SE, Section 11-2-5w, is dry and abandoned at 2,515 feet. Tom Medlin and others' No. 7 Taliaferro "B," SE cor. NW, Section 27-1s-8w, was completed for 135 bbls. in sand at 1,685-86 feet.

(Continued on Page 118)

OPERATIONS IN THE KANSAS FIELDS; REPORTED LINE TO OXFORD TOWNSITE

By J. L. Dwyer
Staff Correspondent, Kansas Fields

The last week of 1927 passed with little exceptional news in the Kansas fields. The White Eagle Oil & Refining Co. is reported to be surveying for a line from its Augusta refinery to the new Oxford townsite pool in Sumner County, a distance of about 30 miles. It is reported that the line will be 6-inch.

Zero weather in western Kansas played a mean part in ruining a drilling operation of the Daneiger Oil & Refining Co. in Barton County. This wildcat well was No. 1 Murphy, NW cor. NW Section 31-18-12w, and it was shut down at a depth of 3,150 feet owing to the presence of a huge lake which had been caused by the floods of last summer, and which were frozen last week. The swelling and heaving of the ice when it began to break up, toppled the derrick over, and floated derrick, boiler, and tanks, a distance of 300 feet from the original location before demolishing the rig.

Butler County

Rosenthal and others' rig is up for No. 9 Shaffer, SW cor. SE SE, Section 4-27-6. Allison & Fitzwilliams built the rig for No. 4 McGinnis, NW cor. NE NE, Section 9-27-6. Keen and others' No. 1 Beedles, SE cor. SW SE, Section 5-27-6, is dry and abandoned at 3,149 feet.

Elk County

Jacqueline Oil Co.'s machine is at the location for No. 1 Weirman, SE cor. SW NE, Section 34-29-12. Pennok Oil Co.'s No. 1 Pickle, CNL SE SW, Section 30-30-11, is rigging up to deepen. Winemiller and others moved a machine out for No. 1 Beatty, SW cor. NW SE, Section 30-30-11. Union Gas Corp.'s No. 1 Vick, C NE SW, Section 2-31-10, is drilling at 175 feet. No. 22 Webb, C NW NE, Section 14-31-10, is rigging up. Jones and others' No. 6 Webb, NW cor. SW, Section 23-31-10, is drilling at 500 feet.

Ohio Fuel Oil Co.'s No. 1 Mullendore, C NW NW, Section 20-29-10, is dry and abandoned at 1,275 feet. Jacqueline Oil Co.'s No. 2 Hawkins, NE cor. NW SE, Section 34-29-12, has been completed for 20 bbls. in sand at 831-44 feet. Waichorn Oil & Gas Co.'s No. 10 Denton, SW cor. NW, Section 3-30-9, was completed for 50 bbls. in sand at 2,278-2,304 feet. Pennok Oil Co.'s No. 1 Collyer, SE cor. NE SW, Section 30-30-11, an old well deepened, made 50 bbls. from sand at 1,519-28 feet. Landon and others' No. 1 Mann, NE cor. Section 22-31-10, made 20 bbls. after being shot with 20 quarts in sand at 1,636-43 feet.

Coffey County

Sheedy and others' No. 3 Hanner, SW cor. SE SW, Section 11-23-13, made 20 bbls. after a shot of 80 quarts in sand at 1,824-50 feet.

Cowley County

Shawver and others' rig is being built for No. 1 Amann, NW cor. Section 10-34-3. Arkansas Fuel Oil Co.'s No. 4 Bid-

(Continued on Page 122)

Vapor Phase Cracking

In view of the present interest in the commercial possibilities and advantages of Vapor Phase Cracking, we believe it important for the petroleum industry to know of our ownership of the following patents, relating thereto:

No. 1,474,475—Application filed June 24, 1916. Patented November 20, 1923. 6 claims.

Claim 1—The method of obtaining gasoline, which consists in vaporizing heavy hydrocarbon oils, causing the vapor to flow slowly at low pressure through and in contact with the walls of a conduit having relatively great length with respect to its cross-sectional area, causing the vapor to frequently and abruptly change its direction of flow through said conduit to prevent the formation of carbon, and heating the walls of the conduit to a temperature sufficiently high to break down the high boiling point compounds of the vapor as it passes through the conduit in contact with the heated walls thereof.

No. 1,474,476—Application filed May 25, 1918. Patented November 20, 1923. 3 claims.

Claim 1—A method of treating vapor of petroleum or the heavier fractions thereof which comprises conducting the vapor under a pressure sufficient only to cause it to advance through a reaction zone of relatively great length and small cross-sectional area, maintaining said vapor during its passage through said reaction zone at a substantially uniform temperature sufficient to break down compounds having high boiling points into compounds having relatively low boiling points, subjecting the stream of vapor during its movement through said reaction zone to successive abrupt impingements and permitting the vapor to flow unobstructedly through the reaction zone portions lying between the successive points of impingement.

Universal Oil Products Company
Owner of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

Champagnolle Wells Showing Decline

Offset Drilling in Progress but No New Development Under Way. Pipe Line Projects Subject of Many Rumors

By D. H. Bancroft
Staff Correspondent, North Louisiana-Arkansas

SHREVEPORT, La., Dec. 31.—Pipe line news, with gas as the transported commodity, was rife this week but with little confirmation to back it up. The newspapers came out with front page stories concerning a great consolidation of gas interests, but the best authority obtainable from each of those concerned was that the newspapers knew more about it than they do. The facts, as outlined in The Oil and Gas Journal in previous issues, are that there is a great consolidation in the making in which Empire Gas & Fuel Co., with its subsidiaries—Natural Gas & Fuel Corp., Public Utilities Corp. of Arkansas and the Arkansas Natural Gas Co., Palmer Corp., Southwestern Gas & Electric Co. (gas interests only), Ouachita Natural Gas Co., Interstate Natural Gas Co., Interstate Pipe Line Co. and Electric Bond and Share Co., through its subsidiary, the Natural Gas & Producing Co., and possibly other interests, will all have a finger in the pie.

Another report along the same line is completion by the Ouachita Natural Gas Co.—Louisiana-Arkansas Pipe Line Co.—of its 16-inch line from the Monroe gas field to El Dorado by which the Arkansas oil town is now drawing its fuel supply from the Monroe Field. The line cost in the neighborhood of $1,000,000 and, when hooked into Hunter's recently acquired 12-inch line started by the Couch interests, and the 6-inch line from Smackover to Camden, bought from the Houston Oil Co., will take gas into Cullendale, or White City, the site of the Houston Oil Co.'s refinery, and the Southern International Paper Co.'s pulp mill. From Cullendale to Camden is a matter of but 2 or 3 miles.

New Local Line

Bossier Parish plantation owners living along the highway down Red River south of Shreveport have let contract to the Southwestern Gas & Electric Co. for a 3-inch line extending 20 miles from town to cost approximately $7,500. They will buy their gas from the Southwestern and eventually the line will be extended further south on the east bank of the river to Coushatta.

News comes from New Orleans that an unidentified interest is seeking a franchise to pipe and distribute natural gas to New Orleans, but what this interest's source of supply and how it proposes to get the fuel to the city are details that are not mentioned. It is known that efforts to get natural gas into New Orleans have been made by different interests at different times ever since the Louisiana Gulf Coast gas was discovered and that all these efforts have been defeated by politicians, and the prospects for success at this time are no better. Interstate Pipe Line Co. has an extension of its 22-inch Monroe-Baton Rouge line to Hammond and Destrahan a few miles north of New Orleans, but the inference from answers to inquiries here at this time is that it is not interested in trying to get into New Orleans.

Backing up Belchic & Laskey's confirmation of plans for a 14 and 16 inch line from Richland Parish to southwestern Louisiana markets is their purchase of gas rights on 1,300 acres in the Richland Field from the Roxana Petroleum Co., for a price said to be around $60,000 and also the gas rights on the Louisiana Oil Refining Corp.'s holdings in Richland.

An interesting sidelight on the generally accepted but little known merger of gas interests in this territory, is a report that Palmer Corp. is said to be entertaining plans for a 26-inch line from the Richland Parish gas field to Shreveport and Waskom, Tex., to connect at the latter point with Moody-Seagraves' 22-inch line to Houston and Port Arthur. It wouldn't be surprising, as the Greenwood district of Caddo Parish where Moody-Seagraves made their entry into this territory, hasn't lived up to expectations, whereas Richland has, and it will be necessary for them to get more gas than Greenwood can supply, even with their connections into the north Webster and Cartersville Fields.

The Moody-Seagraves line, tapping north Webster, north Bossier, central west Caddo and the Waskom (Harrison County) Texas fields is about completed and will perhaps be in operation about the middle of January. By that time there may be come confirmation of the merger of gas interests concerning which the air around these parts has been full of rumors for the past two months and officials of those interests concerned have known nothing.

Champagnolle Falls Off

News from the field during the holiday week was not particularly encouraging. Ohio Oil Co.'s No. 1 R. Pumphrey in Section 1-17-14, completed last week as a 25,000,000-foot gasser, started making oil at the rate of 120 bbls. per day the second day but has fallen off to about 10,000,000 feet of gas while maintaining its 120 bbls., and No. 5 Crain, in the same section, which started off with 500 bbls. initial, went dead and has failed to produce anything at all by swabbing. There is still some offset drilling in Champagnolle but no new development is under way or planned.

In other proven areas of the Shreveport territory results were similarly mediocre except that gas predominated. W. D. Chew put No. 7 fee, Section 33-21-16, Caddo Parish, on the pump for 30 bbls., total depth 1,868 feet, and Gulf Refining Co.'s second completion of No. 10 Herndon, Section 15-21-15, Pine Island, is pumping 32 bbls. from 3,921 feet after deepening from 3,850 feet. Greenwood Production Co.'s No. 1 Alexander, in Section 27-18 16, Greenwood gas district, was dry at 922 feet. In the Cartersville gas district of northwestern Bossier Parish, Magnolia Petroleum Co. completed No. 1 D. W. Robertson, Section 26-23-12, making 33,000,000 feet of gas at 3,059 feet. Bellevue shallow pool in Bossier Parish yielded its fifth or sixth small gasser in Autrey Oil Co.'s No. 4 Snyder, Section 22-19-11, which tested about 250,000 feet of gas, total depth 300 feet. Palmer Corp. completed No. 1 Lewis Burke, Section 26-17-12, Sligo district, north of Elm Grove, at 1,707 feet, testing 1,500,000 feet of gas.

The old Bull Bayou district of Red River Parish was the location of a 53-bbl. pumper for J. H. Askew, No. 2 Richardson, Section 25 13-11, total depth 2,550 feet. His No. 1, on the same lease, was a small pumper and No. 3 is drilling.

The Ouachita Parish division of Monroe gas district had three completions, Imperial Oil & Gas Products Co.'s No. 3 Stubbs, Section 13-19-3e, being a 5,000,000-foot well, total depth 2,190 feet, and Ouachita Natural Gas Co. completing No. 2-A D'Arbonne, Section 34-19-3, for 2,500,000 feet at 2,212 feet, total depth, and No. 7 Smith, Section 38-20-4e, making 34,000,000 feet from 2,137 feet. Monroe's famous wild well which started all the commotion resulting in the present conservation laws of Louisiana, in part, was located on this lease. Richland Parish had a little better average completion in Moody & Seagraves' No. 1 Noble in Section 36-16-5, which tested 30,000,000 feet, total depth 2,455 feet.

Two second completions in the Smackover Field were gassers. Phillips Petroleum Co.'s No. 19 Joyce, Section 33-15-15, Ouachita County, tested 5,000,000 feet at 2,650 feet, after plugging back from 2,696 feet to within 2 feet from where it started deepening. It was a good producer at 2,648 feet, tested salt water at 2,896 feet, recemented and repeated the water show, whipstocked at 2,650 feet; drilled to 2,696 feet and plugged back to 2,650 feet; shot casing at 2,646 feet and finally was completed as stated. Standard Oil Co.'s No. 5 Umstead, Section 32-15-16, a 30,000,000-foot gasser at 2,267 feet, in June 1924, was completed at 2,669 feet, making 2,000,000 feet of gas at 70 pounds with a little water.

In the Champagnolle district, Ohio Oil Co. abandoned No. 1 W. Pumphrey in the southwest corner, southwest of northeast of Section 1-17-14, as a dry hole at 3,037 feet after testing a negligible amount of gas in 6 feet of sand at 2,988-94 feet, dry in 5 feet of broken sand at 3,012-17 feet and afterward bailing salt water in the last level.

Production Drops 4,430 Bbls.

Daily average runs from the field by all pools in the Shreveport district declined 4,430 bbls. during the holiday week, the total being 139,990 bbls., compared to 44,420 bbls. the week before. Louisiana runs totaled 46,620 bbls., compared to 48,583 bbls., and Arkansas pools shipped 93,370 bbls., compared to 95,837 bbls. Most of the pools in both states contributed to this decline. Caddo light fell off 122 bbls. Haynesville 134, DeSoto-Red River 210, Cotton Valley 241, Urania 867, El Dorado 172, Smackover light 261, Smackover heavy 1,713, Stephens 214, Nevada County 450.

Daily average runs from the several pools were the following:

Caddo light	11,925
Caddo heavy	4,050
Homer	4,565
Haynesville	6,750
DeSoto-Red River	4,180
Elm Grove	600
Bellevue	1,050
Cotton Valley	4,810
Urania	7,855
Pleasant Hill	835
Total	46,620
El Dorado	5,920
Smackover light	9,205
Smackover heavy	71,170
Stephens	1,150
Nevada County	3,120
Lisbon	2,680
Bradley	125
Total	93,370
Total both states	139,990

NORTH LOUISIANA

Bossier Parish

Bellevue: Humble Oil & Refining Co. is drilling No. 30 Bliss and Wetherbee, Section 15-19-11, at 4,735 feet in hard lime.

Cartersville: Arkansas Natural Gas Co.'s No. 1 Barnette, Section 17-23-12, is drilling at 2,450 feet. Northwest

(Continued on Page 118)

ABANDON CATAHOULA PARISH TEST AFTER DRILLING FOR SIX MONTHS

By D. H. Bancroft

SHREVEPORT, La., Dec. 31.—Lochnager Oil & Gas Co. has finally given up trying to get production in Catahoula Parish, 40 miles south of Richland Parish gas, where it has been drilling for the past six months. Its first well, No. 1 Beasley, in Section 26-9-6e, staged a tremendous blowout of gas, mud and salt water from 2,900 feet on August 29 estimated when it finally calmed down at 15,000,000 feet of gas and 10,000 bbls. of water. After blowing at this rate for a half hour or an hour it bridged and was finally abandoned as a junked hole after being deepened and losing liner at 3,093 feet. No. 2 was started 3 miles west in Section 29-9-6, drilled to 3,118 feet where it made no show in 4 feet of sand, and deepened to 3,141 feet and then plugged back and whipstocked at 3,098 feet, testing salt water at 3,112 feet. Their No. 1 McMillan also in Section 29-9-6 was drilled to 3,500 feet without any unusual amount of grief, testing dry.

Magnolia Petroleum gave up its No. 1 Stout Lumber Co., Section 26-14-16, Ouachita County, Arkansas, as a dry hole at 3,414 feet after several promising looking sands had failed to produce more than a small show of heavy oil in a strata at 2,099-2,105 feet, and it with salt water. Fruen and others also abandoned their Nevada County wildcat, No. 1 T. L. Rhodes, in Section 22-12-21, about 10 miles north of production in the Irma district. Last week it was reported that J. J. O'Brien had bought a small refinery in Texarkana, shut down for the last three or four years, and planned to move it to the Irma district to run his own and outside production, but to date efforts to get any information from him or his agent, or from other sources, concerning these reported plans have failed.

Sales & Walker are reported planning to go back to No. 2 Bolinger in Section 31-23-11, 2 miles east of nearest production in the southeastern corner of the Cartersville, Bossier Parish, gas district, and deepen it to the Woodbine sand at around 3,100 feet in an attempt to find the production they tapped at 3,091 feet in No. 3 Bolinger, in Section 30-23-11. The latter, completed November 24 flowing 500 bbls. of fluid, 90 per cent salt water, has increased its oil production from 50 to around 100 bbls. in the same amount of fluid.

Mississippi Activities

The holidays materially slowed down activities in Mississippi, but as the majority of those engaged in trying to develop oil or gas in that state left with the statement that they would return prepared to start on a larger scale on their return, the new year is expected to be productive of much drilling, particularly as several enterprises shut down for lack of funds have been refinanced.

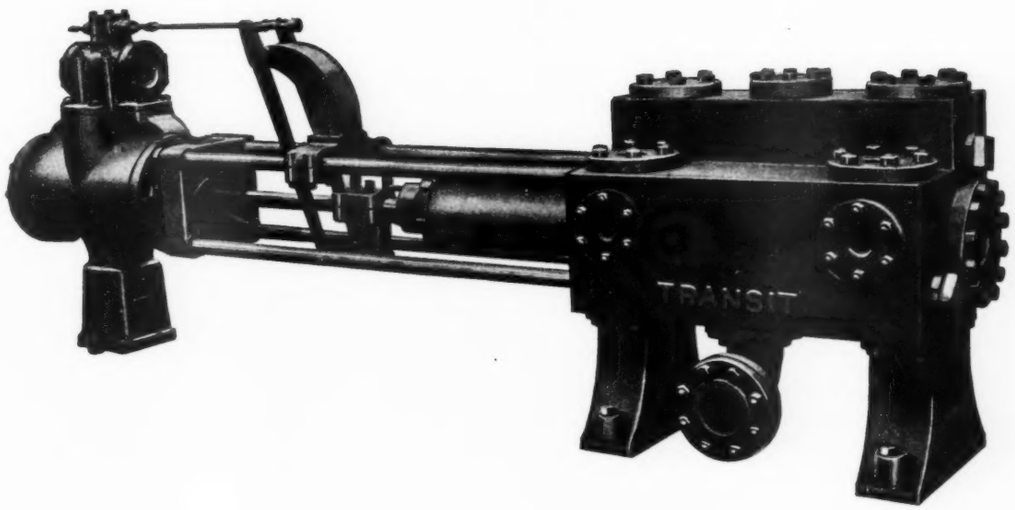
Natural Gas & Fuel Corp. set 5⅞-inch casing with packer at around 2,687 feet in No. 1 Rye, Section 22-15-17, Monroe County, after a shot of 40 quarts at 2,693-2,707 feet, but failed to shut off salt water, believed coming from a sand passed through at around 2,550 feet but efforts to hake a commercial well of it have not been abandoned.

Transcontinental Oil Co. and The Texas Company, drilling No. 1 Day in Section 18-16-18, Monroe County, has gone through more than 200 feet of a barren fine gray sand, total depth 1,575 feet, and is preparing to set 8-inch casing at around 1,800 feet. Amort Petroleum Co. has cleaned out No. 1 Dill, Section 12-13-18, Monroe County, and will resume drilling at 2,270 feet. Its No. 1 Hall, in Section 8 13-17, 2 miles east of the Dill location, is rebuilding derrick to rig up with rotary tools to fish for

(Continued on Page 121)

TRANSIT HOT OIL PUMPS

The "Spare" Idea



Many refinery engineers use the "spare" idea to insure continuous hot oil pump operation. That is, an extra pump of equal capacity to any other of the hot oil pumps is installed. Generally this extra pump is kept in operation, and a slow speed, easy running and consequently long lived installation is the result. When it is necessary to shut down one of the hot oil pumps, the capacity of the remaining pumps, or pump is sufficient for the needs.

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Well in Alworth Pool Stirs Interest

Alworth-Stevens-Hild Co.'s No. 10 M. Garza Completed as 10,000,000-Foot Gasser, Making 360 Bbls. of Oil Also

By B. D. Stevenson
Staff Correspondent, Southwest Texas

SAN ANTONIO, Tex., Jan. 2.—Alworth-Stevens-Hild got a 10,000,000-foot gas well making 15 bbls. of oil an hour (360 bbls. a day) in its No. 10 M. Garza in Block 7, Section 39, in the Alworth Pool in Jim Hogg County, 5 miles south of the Randado Pool. The Alworth discovery well in Survey 39, was brought in in January, 1927, at a total depth of 1,025 feet. The discovery well was No. 2 Garza and was in Block 4 of Survey 39. After that Alworth got others interested and several additional wells were drilled during the past year. Success, however, was rather limited both for the Alworth-Stevens-Hild and for the Magnolia which drilled a little to the north and got some oil. No. 10 Garza is 300 feet from the northeast line and 110 feet from the southeast line of Block 7 in Survey 39, and is about 2,800 feet south and a little west of the discovery well. It is the farthest south of any well in the field. The Alworths have three other wells that have been averaging about 10 bbls. each daily on the pump.

Until No. 10 was drilled in it was looking as though the field might be quite limited and not to be compared with the Randado Pool, 5 miles to the north. Now it looks as though the Alworth Pool had some better possibilities. The well will certainly start some drilling to the south. The only wells drilled to the south were by Rollin V. Hill over 2 miles south and a little to the west of the Alworth well. Humble recently ran a line from the Randado Pool south to the Alworth Pool and has been taking the oil.

Gas Well Increases Flow

Robert Driscoll has made two locations in the new Driscoll Pool in Duval County. Driscoll is a ranchman and never before engaged in the oil business. He drilled several tests on the ranch he owns in feet and the last well at 2,439 feet, reported a week ago as a 30,000,000-foot dry gasser is now rated at 50,000,000 feet and with 900 pounds rock pressure. Driscoll is the owner of 60,000 acres of land in this ranch and the discovery well is not on the edge of the ranch by quite a little. Driscoll is rigging up on both of the new locations. His No. 9 fee is in Survey 23, the same survey as the discovery well and is 1,750 feet from the west line and 2,000 feet from the south line and the No. 10 is in Survey 448 and is 850 feet from the east line and 2,300 feet from the south line.

Johnson and others completed a well in the Randado Pool the first drilled in that pool in months and it is understood they will keep a rig running. In the Kitselman & St. Albans end of the Henne, Winch & Fariss Pool, the K. & S. Corp. is starting to drill again after being idle in that field for months. This company opened a new producing spot of both gas and oil on the Holbien land and the gas is now being marketed to the pipe lines.

As the old year closes and the new year opens there is nothing to indicate any change in the condition of the industry in Southwest Texas. There will be no more drilling to speak of in the proven fields the coming year than in the past except, always for gas. Gas is a very marketable commodity in Southwest Texas at this time with every indication that the coming year will see quite a demand that will keep operators hunting for new gas areas and developing old ones.

COMPLETIONS

Jim Hogg County

Johnson and others' No. 22 Palacious, Survey 291, Block 14, Randado Field, at 1,276 feet is a 75-bbl. oil well.

Alworth-Stevens-Hild's No. 10 M. Garza, Survey 39, Block 7, Alworth Field at 1,018 feet is a gasser of 10,000,000 feet and spraying about 15 bbls. of oil an hour.

Caldwell County

Magnolia Petroleum Co.'s No. 3 McKinney, J. Henry Survey, Luling Field, at 2,114 feet is a 25-bbl. well.

Live Oak County

Houston Oil Co.'s No. 21 Cartwright, J. M. Colchado Survey, Cartwright gas field gauged 40,000,000 feet with rock pressure of 817 pounds.

Bee County

Nichols & White's No. 1 Hicks, Block 19, NW cor. near Normanna, has been abandoned dry at 1,408 feet.

Webb County

F. J. Bates' No. 1 Bruni, Block 47, Aviator Field, has been abandoned dry at 2,005 feet.

New Locations

Francis C. McCarty's No. 1 R. C. Sutton, Survey 36, LaSalle County is rigging up.

Ritchison and others' No. 1 Wheatley, Block 2, Survey 1,570, Reiser Field is location.

Houston Oil Co. (Sun) No. C-3 Benavides, Blocks 77, 78, 127, 128, Cole Field, Duval County has rig up.

Edward St. Albans' No. 9 R. Lopez, Henne, Winch & Fariss Field, Jim Hogg County has been spudded in.

R. Driscoll's No. 9 Driscoll, Driscoll Field, Survey 23, Duval County has rig up; No. 10 Driscoll, Survey 448, same field, has rig up.

Magnolia Petroleum Co.'s No. 16 O. F. Stair is location in Luling Field; No. 11 W. J. Tiller is location in the Luling Field, Caldwell County.

J. B. Douglas' No. 1 C. O. Lawrence, has machinery on ground for test 12 miles northwest of Edna in Jackson County.

Eckert and associates' No. 1 C. T. Tom, Atascosa County, is moving on rig.

Schimmel Petroleum Co.'s No. 18 Kohler, Survey 39, Somerset Field in Bexar County is location 569 feet south of No. 11; No. 19 Kohler, same survey and field, is location 608 feet east of No. 14; No. 20 Kohler, same survey and field, is location 608 feet east of No. 19; No. 21 Kohler, same survey and field, is location 569 feet south of No. 18.

Cole Gas Field—Duval

Morgan-Humphrey's No. 1 Harper, Survey 323, located 150 feet to west and 422 feet to northeast corner of Survey 319, but on Survey 323, is moving on. Houston Oil Co.'s (Humble) No. 1 Juan Cuellar, Share 1, Cuellar grant, 3,300 feet to southwest line and 2,324 feet to southeast lines, is drilling at 1,430 feet. Cole Petroleum Co.'s No. 50-B Benavides, Survey 5, Block 7, located 611 feet to northwest lines and 625 feet to northeast lines, at 2,375 feet tested salt water, at 2,474 feet tested salt water and is now drilling at 2,525 feet.

Humble-Reiter-Foster Pool

Humble Oil & Refining Co.'s No. 7 Kohler, Survey 165, located 200 feet to north line and 200 feet to west line, is rigging up.

Randado Field—Jim Hogg

Magnolia Petroleum Co.'s No. 32 Merchants State Bank, Survey 415, located 850 feet to west line and 2,100 feet to north line, at 2,558 feet is in hard sand rock; No. 33 Merchants State Bank, Survey 415 is location 2,400 feet to north line and 1,690 feet to west. Johnson and others' No. 22 Palacious, Survey 291, Block 4, located 1,050 feet to west line and 450 feet to south line, has sand and set casing and looks like good producer.

Piedras Pintas Dome

Humble Oil & Refining Co.'s No. 7 Walsh, Survey 185, located 2,050 feet to east line and 1,750 feet to north line, at 4,332-53 feet showed oil, tested dry and is standing.

Alworth Pool

Alworth-Stevens-Hild's No. 10 M. Garza, Survey 39, Block 7, located 300 feet to northeast and 110 feet to southeast lines, at 1,001-14 feet showed gas and at 1,014-18 feet showed oil and will test after holidays.

Reiser Field—Webb

W. O. Wheatley's No. 2 Reiser, Survey 1,617, Block 8, and located 150 feet to south and east lines, has been spudded in.

Aviator or Bruni Tracts

F. J. Bates' No. 1 Bruni, Block 47, located 150 feet to south and east lines, is standing at 2,005 feet.

Carolina-Texas Field

Serna-Forrest's No. 1 Benavides, Survey 2,272, Block 2, located 150 feet to north line and 200 feet to east line, is drilling at 160 feet in hard rock.

Cole Gas Field No. 2

Cole Petroleum Co.'s No. 51 Benavides, Survey 412, Block 5, located 160 feet to north line and 150 feet to west line, is location.

Luling Field—Caldwell

Pat M. Armstrong's No. 1 Hardeman, Miles G. Dykes Survey, has resumed drilling at 50 feet. North & South's No. 1 Kelly is drilling; No. 2 Tiller is drilling.

Dale Field

The Texas Company's No. 5 Lackey, Jasper Gilbert Survey, 150 feet to northeast and southeast lines, is drilling in at 2,156 feet; No. 2 Osteen, W. C. Swearingen Survey, 150 feet to southwest and southeast lines, at 2,206 feet is flowing by heads from both sides of casing which is being reset; No. 2 Osteen, same survey, is in top of chalk at 2,334 feet and ready to drill in.

Kingsville Field—Kleberg

Houston Oil Co.'s No. 3 Kissman, Section 41, Block 10, located 500 feet to north and west lines, has derrick up. Humble Oil & Refining Co.'s No. A-4 Dennet, Lot 1, Section 39, at 550 feet to north line and 150 feet to west line, at 2,238-55 feet has oil sand and is reaming to set casing.

Adams Gas Field—Medina

Southern Gas-Witherspoon Oil Co.'s No. 3 Redus, Survey 92, located 400 feet to north and west lines, is drilling at 500 feet; No. 5 Adams is location 1,400 feet north of No. 4. Witherspoon Oil Co.'s No. 1 Ridal lease is location in western part of the field; No. 6 Nixon, Survey 119, has set casing at 878 feet.

Refugio Gas Field—Refugio

Coast Gas Co.'s No. 2 Shelly is drilling at 2,415 feet in gumbo. Houston Oil Co.'s No. 4 Rooke at 2,634 feet cored sand; No. 8 Heard is drilling in gumbo at 2,316 feet; No. 1 Smith Heard is rigging up to deepen; No. 11 Heard at 2,658 feet is waiting on cement; Houston Gulf Gas Co.'s No. 2 Ryals is rigging up; No. 1 Tom O'Connor is in gumbo at 810 feet; No. 1 Vance at 2,623 feet has water sand; No. 5 Fanny Heard is in sand at 3,276 feet; No. 6 Fanny Heard at 2,405 feet is deepening at new sand; No. 3 Heard has set casing at 400 feet; No. 4 Heard is drilling at 2,510 feet; No. 1 Smith Heard is standing at 2,510 feet. George Williams, trustee, No. 1 Terrell, Martin Powers Survey, 6 miles southwest of Refugio, is standing at 1,878 feet.

WILDCATTING OPERATIONS EXPECTED TO INCREASE IN SOUTHWEST TEXAS

By B. D. Stevenson

SAN ANTONIO, Tex., Jan. 2.—With the holiday lull still on wildcat interest is at a low ebb but with some indications that things will pick up a little beginning with this week as they always do the first of January regardless of conditions. Pubdt was to test his well in Zavala County today. Williams & Gates whose No. 1 Gohmert in DeWitt County has been standing for some months at shallow depth has been sold to San Antonio interests and the Durbin Oil Co. organized. The well is being cleaned oil and this week should be ready to resume drilling.

Another interesting announcement of the week is that some more drilling will be done in the Edna Field in Jackson County. Wright Brothers have drilled a lot of wells there and there is undoubtedly a lot of gas but mechanical difficulties have prevented any satisfactory completion of a well. J. B. Douglas who had charge of the drilling of wells for Wright Brothers and C. A. Lawrence will drill a well on Lawrence farm north of where the Wright Brothers have been drilling.

Mile E. Trussell, trustee for the drilling of a well in northwest Duval where Schlessinger Oil Corp. got what was almost a well, is down to the sand depth of the Schlessinger-Moody tract wells and is now making a drill stem test of the sand.

Duval County

Milo E. Trussell, trustee's, No. 1 Moody, NW NE Survey 60, located 175 feet to west line and 150 feet to north line, is feeling for sand at 2,370 feet, approximate depth. National Oil Co.'s No. 1 Ball, Survey 16, located 450 feet to north line and 150 feet to east line, depth 40 feet, tools borrowed from company's test in San Patricio to spud in being replaced with other tools and test will resume drilling January 2.

Hidalgo County

Queen City Oil & Gas Co.'s No 1 Adams, Lot 1, Block 82, fishing at 2,155 feet. Dayle L. Smith Oil Co.'s No. 5 Fernandez, Porcion 46, Block 34, located 125 feet to north and 225 feet to west line, is drilling at 3,100 feet.

Jim Hogg County

Paesan Oil Syndicate's No. 1 Campbell, Las Vivoritas grant, is in sandy shale at 2,920 feet. T. G. Shaw's No. 1 Jones, Survey 381, Block 12, located 171 feet to south line and 486 feet to west line, is standing at 950 feet. Holden and others' No. 3 Jones, Share 27, Block 136, is standing at 2,548 feet.

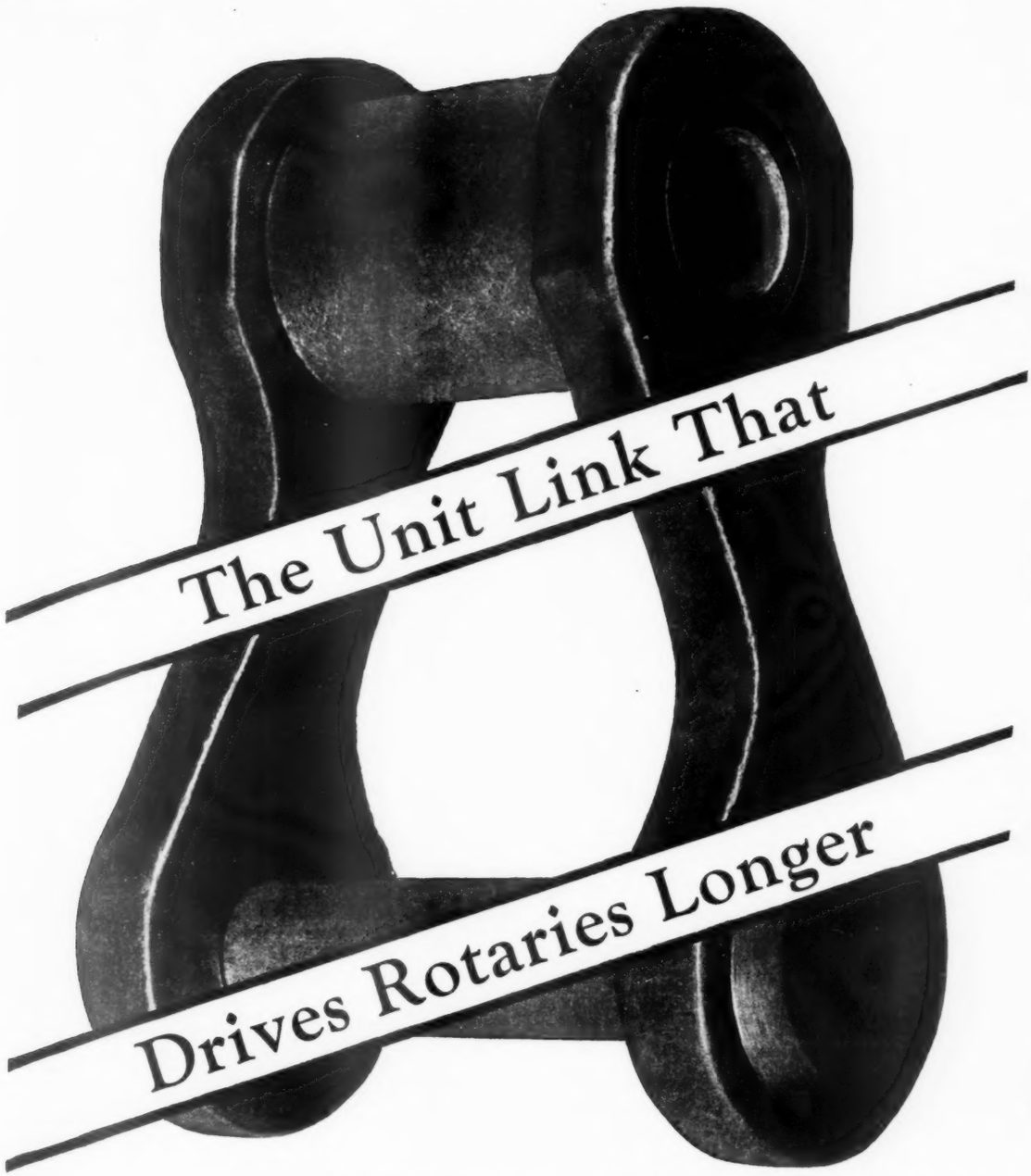
Bastrop County

Noack & Laning's (Kelly) No. 1 Roemer, Isaac Casner League, 150 feet to NE cor., is shut down at 1,935 feet. James O'Hara's No. 1 Pritchett is to resume drilling in January. Young & Owens' No. 1 Ed Jones, 9 miles west of Bastrop, is moving in.

Bee County

D. Hewitt's No. 1 G. A. Ray, 1½ miles

(Continued on Page 113)



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DARLING GATE VALVES

New Production in Lockport Field, La.

Lake Charles Well Flows Approximately 750 Bbls. of Net Oil. Was an Old Well Deepened From 3,800-Foot Level

By Neil Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Jan. 1.—The Lockport Field near Lake Charles in Calcasieu Parish, Louisiana, figured again in coastal field developments the past week when Vacuum Oil Co. and Gulf Refining Co. completed their joint No. 3-A Farquahar, flowing approximately 750 bbls. of net oil. This is the first new production this field has had in several months. The well was one of the few completions on the Gulf Coast during the week.

The No. 3-A Farquahar is an old well deepened from the 3,800-foot level to the deeper sand at 4,413 feet and makes a total of 21 wells now producing in the Lockport Field. This field is owned entirely by the Vacuum Oil Co. and the Gulf Refining Co. jointly but operations are conducted by the Vacuum.

This well is one of four wells expected to be completed by the operators at Lockport within the next week or 10 days. The next probably will be No. 4 State, which Saturday was swabbed down 4,000 feet with fluid, 40 per cent oil, rising in the hole 50 feet hourly. This production is from the same sand as in the No. 3-A Farquahar, the total depth being 4,418 feet.

All new wells completed in the Texas and Louisiana coastal district were small and consequently flush production added during the week totaled only approximately 2,000 bbls. from seven producers. Humble Oil & Refining Co. got a 110-bbl. pumper at Barbers Hill in Chambers County, Texas; Gulf Production Co. completed a 100-bbl. pumper at Boling, Wharton County; Adabel Oil Co. has a 5-bbl. pumper at Batson and in the Evangeline Field of Acadia Parish, Louisiana, Salt Dome Oil Co. made a 50-bbl. pumper. At Hull, Republic Production Co. worked over an old well and got a 150-bbl. pumper while at Allen Dome, Brazoria County, Texas, Roxana Petroleum Corp. completed a 25-bbl. well flowing by heads.

The latter well is an old well deepened to a new sand at 5,337 feet on a dome which was discovered and is being operated exclusively by the Roxana Petroleum Corp. Two other tests are drilling on this dome, which is practically wildcat territory.

Of some interest in this district was the completion of Salt Dome Oil Co.'s No. 1 Cruse (Valle) in the Evangeline (Jennings) Field of Acadia Parish. This well is on the Valle arpent lease, one of the most famous producers in the entire coastal territory. An arpent is a tract of eighty-five one hundredths of an acre and this one tract has been perhaps the most prolific lease for its size in history.

As the week closed operators were watching Rio Bravo Oil Co.'s No. 101 G. H. & S. A. at Pierce Junction, south of Houston, Harris County. This test was reported as having a heavy showing of oil from sand at 4,546 feet. It is on the northern flank of the dome and in an extension district which has indications of becoming a prolific producer.

Although there were comparatively few completions during the week there are around a dozen wells in Gulf Coast fields which are being put on the pump for small producers. The majority, however, are old wells worked over.

Operations in the coastal territory were quieter the past week than at any other time in the last several months, this being attributed somewhat to the holiday season with most companies restraining new work and drilling as much as possible until after the opening of the new year.

Production also reflected another decline in the daily average the past week, this being due to a downward trend in virtually every field on the Gulf Coast. The decline in the daily average during the week was 4,137 bbls. A decrease also was shown in Central Texas fields but there was a slight increase in Southwest Texas.

The general crude situation as far as the Gulf Coast fields alone is concerned apparently is very healthy and within the next few weeks some strong competition is expected for these grades. The seasonal increase in demand for lubricating oils from Gulf Coast crudes has a noticeable effect on the crude supply. This is being reflected to some extent on stocks in Gulf Coast fields which have been showing a steady decline. Stocks in Gulf Coast fields on December 1, the latest report available, totaled 15,529,831 bbls., including earthen storage. This was a decrease of 731,123 bbls. from the stocks of November 1.

Daily average production of Texas and Louisiana coastal fields, exclusive of Southwest and Central Texas, the past week totaled only 134,049 bbls. This was the lowest production average touched in several months. Very little new production is being added with operations generally being restrained and the natural decline of wells is being reflected in production totals. Daily average production by fields in the Gulf Coast proper and in Southwest Texas and Central Texas Fields during the week ending December 31 was:

Coastal

Spindletop	51,844
Saratoga	1,099
Batson	1,208
Goose Creek	7,350
Sour Lake	3,836
Hull	12,608
Big Creek	2,085
Columbia	9,024
Humble	3,731
Pierce Junction	11,385
Blue Ridge	4,149
Markham	250
Orange	3,985
Damon Mound	825
South Dayton	224
South Liberty	1,972
High Island	91
Moore Field	39
Boling	2,110
Nash	1,245
Barbers Hill	600
Vinton	4,556
Starks	352
Edgerly	2,280
Evangeline	1,085
Lockport	4,913
Sweet Lake	570
Sulphur	225
Hackberry	508
Total this week	134,049
Total last week	138,196
Decrease	4,147

Southwest Texas

Somerset	2,245
Lytton Springs	1,570
Dale	616
Luling	14,780
Miscellaneous	8,210
Total this week	27,421
Total last week	27,300
Increase	121

Central Texas

Mexia	8,491
Cedar Creek	595
Nigger Creek	1,240
Currie	545
Wortham	23,000
Richland	637
Powell	12,941
Total this week	27,149
Total last week	27,572
Decrease	423

Austin County

Humble Oil & Refining Co.'s No. 1 Stravoski at Raccoon Bend, Austin County, has started drilling and Saturday was in sticky shale at 502 feet. This company's No. 2 Gotosky in the same district is in hard sand at 2,341 feet.

Weedock and associates' No. 1 Ward, Austin County, in the H. & T. C. Railroad Survey, has been spudded in after standing for more than six weeks with the rig up. This test already is down around 200 feet.

Brazoria County

At Allen Dome, Roxana Petroleum Corp.'s No. 1 Allen Bernard is flowing 25 bbls. of oil by heads daily from sand at 5,337 feet. No. 4 Allen on the same dome is drilling shale at 4,606 feet after sidetracking at 4,489 feet. No. 1 Random is down 4,462 feet where casing is being set.

At Clemens Dome, Roxana's No. 2 Bell is drilling sticky shale at 5,149 feet.

Gulf Production Co.'s No. 3 Perry at Stratton Ridge is drilling at 4,049 feet. Humble Oil & Refining Co.'s No. 4 Coon, West Columbia, still has not completed a fishing job preparatory to deepening.

Chambers County

At High Island, Chambers County, Gulf Production Co.'s No. 2 Smith is drilling at 3,842 feet. Sun Oil Co.'s No. 10 Cade, also at High Island, is drilling around 3,900 feet. Liner has been set in the latter company's No. 11 Cade at 3,375 feet. No. 6-C Cade is sidetracking around 1,975 feet.

Pure Oil Co.'s No. 1 Lost River at Lost Lake has resumed drilling after being shut down at 2,480 feet for fuel.

Humble Oil & Refining Co.'s No. 5 Meyers, Barbers Hill, has been completed at 3,257 feet pumping 110 bbls. of pipe line oil daily.

Fort Bend County

H. R. Cullen and associates' No. 1 Blakely, Blue Ridge, Fort Bend County, failed to make a well at 3,625 feet and is being deepened. It is drilling below 3,725 feet. Gordon, Folwell & Dickson are rebuilding derrick for No. 3 Blakely, also Blue Ridge. The original derrick was destroyed by fire following a gas blow out. Gulf Production Co. is pulling tubing in No. 11 West Schenck. The latter is an old well to be deepened. This company's No. 13 West Schenck is drilling at 3,665 feet.

Gulf Production Co.'s No. 14 Moore at Moore's Field, is drilling at 3,664 feet.

At Big Creek, Gulf Production Co.'s No. 34 Davis is drilling at 2,986 feet and No. 44 Davis at 3,980 feet. The former is an old well being deepened. The Texas Company's No. 3 Wheat is drilling at 2,650 feet.

Gulf Production Co.'s No. 2-A Bear, Long Point, is drilling at 3,977 feet. Drilling also has been started in No. 6 Trone and No. 7 Wolff. The No. 6 Trone is down 415 feet and the No. 7 Woolf 325 feet.

Humble Oil & Refining Co.'s No. 1 Sugar Land Industries at Sugar Land has not started actual drilling as yet the latter being delayed pending the laying of a gas line to supply fuel.

At Nash Dome, Rycade Oil Corp. is cutting and pulling liner at 3,998 feet. A test is to be made at No. 20 Wisdom and preparations are being made to bail. This test cored a sand showing oil at 3,968 feet and run the 6⅝-inch casing at 3,940 feet. No. 21 Wisdom is drilling hard, sandy lime at 2,958 feet. Rycade also has completed a derrick for No. 22 Wisdom.

Harris County

Adabel Oil Co. has completed a small pumping well at Batson, the No. 117 McGoldrick-State Land. This well is making 5 bbls. of oil with 50 bbls. of water from sand at 1,180 feet. Capitol Oil Co.'s No. 9 Hodges at Batson is to be put on the pump for an oil sand at 3,900 feet. Deutser Oil Co.'s No. 1 Colorado-Batson Syndicate at Batson has been shut down and at present is standing at 1,460 feet.

Gulf Production Co.'s No. 13 Tabor, Saratoga, is drilling at 1,881 feet. Regna Oil Co.'s No. 2 Teel, also at Saratoga, tested dry at 1,575 feet and has been shut down. Rio Bravo Oil Co.'s No. 104 D is drilling around 1,990 feet. Sun Oil Co. has set liner at 2,100 feet.

Gulf Production Co. has started drilling No. 3 Thomson, Sour Lake, and Saturday was down 414 feet. Orange Petroleum Co.'s No. 4 Merchant at Sour Lake tested salt water at 4,460 feet.

Harris County

Rio Bravo Oil Co. has what looks like another good well at Pierce Junction in its No. 101 on the G. H. & S. A. right-of-way. The test is showing oil at 4,546 feet. This well is on the extreme northern flank of the dome and is a semi-extension. This company's No. 7-B Bender at Pierce Junction is drilling at 1,400 feet, and its No. 2 G. H. & S. A. is down the same depth. The No. 7 P. S. A. is drilling below 4,240 feet. Anderson & Plummer's No. 2 Whitehead is drilling at 2,950 feet, and Cullen and associates' No. 4 Howe is down below 3,500 feet. Gulf Production Co.'s No. 1 Perry is drilling at 5,267 feet. No. 22 Taylor at 4,751 feet and No. 23 Taylor at 3,243 feet. Hutex Oil Co.'s No. 1 Traper encountered salt water at 2,750 feet. Leonard Petroleum Co. is rigging up for a new test at Pierce Junction. This will be No. 1 Settegast. This company's No. 1 Marland fee is making a small pumper at 4,610 feet.

Moody Corp. (Moody-Seagraves) has started drilling in No. 3 Hume at Pierce Junction and already is down 1,350 feet. Rigs are completed for two other Pierce Junction tests to be drilled by this company, the No. 2 Whitehead and the No. 1 Cooper. Navarro Oil Co.'s No. 2-B Cain is drilling below 3,240 feet. Sun Oil Co. is to put No. 1 Fitzsimmons on the pump as it will not make a flowing well at 4,600 feet.

Dunbar Oil Co. (Transcontinental Oil Co.) has hit the salt in its No. 1 Hirsch at Humble. This test is on the far north flank of the dome. Salt was hit at 4,526 feet and the test has been abandoned.

At Goose Creek, Gulf Production Co.'s No. 18 Hoffman-Gaillard is drilling at 2,790 feet. This company's No. 21-A Wright is down 3,035 feet. Humble Oil & Refining Co.'s No. 73 Simms-Smith, also Goose Creek, is in shale at 4,169 feet and its No. 4 Ashbel Smith is in gumbo at 2,709 feet. The latter tested dry at 2,610 feet and is being deepened. Humble's No. 10 Sweet still is fishing liner at 2,626 feet. Lube Well Oil Co.'s No. 1 Dannenbaum, Goose Creek, has been shut down at 1,600 feet. Port City Oil Co.'s No. 1 Addey is drilling below 1,900 feet. Powell Oil Co. is putting No. 6 Bryan on the pump at 2,750 feet.

Humble Oil & Refining Co.'s No. 2 Warren at Hovkley is drilling hard sand at 3,604 feet. The latter is at Hockley.

Matagorda County

Gulf Production Co. has abandoned No. 4 Sanborn at Hawkinsville after drilling only to 923 feet. At Markham, Rycade Oil Corp. and Humble Oil & Refining Co.'s No. 5 Kountz is washing after having a heaving hole at 3,920 feet.

Jefferson County

At Fannette, Gulf Production Co.'s No. 4 Bordages is drilling at 4,511 feet.

Gulf's No. 10-A Marrs McLean, Spindletop, is drilling at 5,383 feet. No. 17-A Marrs McLean is drilling at 4,010 feet and No. 18-A Marrs McLean at 3,326 feet. This company's No. 7 Jack & Duff is drilling at 3,346 feet while a rig is up for No. 8 Jack & Duff. A rig also is up for No. 228 Gladys. Magnolia Petroleum Co. is drilling below 4,800 feet in No. 7-A fee. Sun Oil Co. is drilling at

(Continued on Page 113)

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To Build La Barge Line in the Spring

Tests Show Output in Excess of Required Production. Pipe Line Construction in Colorado Being Pushed

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Dec. 29.—There was no completions reported in the Rocky Mountain area Christmas week, a season that for the past few years has been popular for bringing in wildcats. A Supreme Court decision in Wyoming in the case of Miller vs. F. E. Hurley sustains the policy of the State Land Board in renewing leases at the end of five-year periods where operators show good faith rather than giving leases to prior applicants who have done no development. Tests of production in the LaBarge Field in southwestern Wyoming show that the output is in excess of the 2,000 bbls. daily required by the Midwest interests before undertaking the construction of a pipe line to the railroad. Plans provide for building the line the coming spring. A showing of oil and gas in the Sundance at 3,581 feet in the Patten well on the Irvine structure in Converse County, is reported.

In New Mexico, the Texas Production Co.'s No. 2 Robinson, in Eddy County, made 90 bbls. in eight hours, flowing by heads. When the gas pressure had abated, it swabbed 10 bbls. an hour without lowering the fluid in the hole. Getty Oil, Inc.'s No. 1 Hinkle, 10 miles southeast of the Artesia Pool, flowed 69 bbls. the first 24 hours and 77 bbls. in the second period after tubing had been run. It was then shut in. Marland Oil Co. is moving in for a test in Section 19-26-37, Lea County, 10 miles west of the Texas Production Co.'s No. 1 Rhoades, a producer.

Some difficult drilling is being encountered in southwestern Utah in the Mid-American Oil Co.'s deep test near St. George, it being necessary to shoot the hole at 3-foot intervals and to dress the tools four times a day. Other wells reveal nothing of interest outside of a small show in the Diamond Oil Co.'s No. 3, in Diamond Canon.

Pipe line construction in Colorado is being pushed rapidly in spite of the cold weather. Workmen laid 1½ miles on the Iles line in one day with the temperature below zero and while a snowstorm prevailed. More than 800 men soon will be working on the Colorado end of the Amarillo-Denver gas line. The Texas Production Co.'s Sundance sand test on the Moffat Dome in its No. 10 Knowlton looked more encouraging when swabbing exhausted the water but failed to exhaust the oil. Deeper drilling on the Texas Production Co.'s No. 1 Rule on the Tow Creek Dome makes the well look more promising, there being 1,300 feet of oil in the hole from shale at 4,225 feet.

The Rocky Mountain Association of Petroleum Geologists at its annual meeting in Denver, elected Paul B. Whitney, chief geologist of the Repollo Oil Co., president to succeed H. A. Stewart, chief geologist of the Texas Production Co., and J. L. Irwin, of F. E. Kistler & Co., first vice president; Harry Aurand, of the Midwest Refining Co., second vice president; and Roy C. Brehm, of the Texas Production Co., secretary and treasurer.

John Wilson, formerly with the geological staff of the Midwest Refining Co., but recently assistant chief geologist of the Pan American Oil Co., has been named assistant professor of geophysics at the Colorado School of Mines, beginning January 1, 1928.

Wyoming

A decision of vast importance to owners of leases on state lands from the Wyoming State Land Board was rendered by the State Supreme Court the past week in the case of Miller vs. F. E. Hurley. The enabling act creating the State of Wyoming provided that state lands could not be leased for a greater period than five years, and while this has been technically observed by the board, it has been its policy to renew leases upon expiration where they were held by operating companies actively engaged in the development of the properties. This policy was definitely expressed about 10 years ago in a resolution adopted by the board in order to assure bona fide lessors of state lands that they would not be ousted at the end of five-year periods while in the midst of development of producing properties.

F. E. Hurley, vice president of the Ohio Oil Co., held a lease on proven ground in the Grass Creek Field for his company with the knowledge and consent of the board. This lease expired on June 19, 1924. Hurley applied for a renewal on the ground that he had complied with the terms of the lease and had developed the land. Henry A. Miller, representing F. G. Bonfils and the H. H. Tammen estate, owners of the Denver Post, filed an application for the lease prior to the filing of the Hurley application for a renewal. The board granted the lease to Hurley at the same royalty offered by Miller. The latter took the case into court with the results that the board was sustained. The evidence showed, the court pointed out, that the Ohio Oil Co. had drilled 39 wells on the land covered by the lease at a cost of $277,726, had spent $50,881 for surface equipment and had paid the State more than $600,000 in royalties. The evidence further showed that the Ohio had tested 19 structures in Wyoming of which only two had proven commercially productive, while Bonfils and associates had never developed any unproven structures. The decision of the court establishes a precedent which sustains the policy of the land board and enables it to make leases with assurances that where properly developed, the operator need have no fears about obtaining renewals that will enable him to proceed with orderly development.

La Barge Line

No completions were reported for the week in Wyoming. The most important development was the assurance of sufficient production in the LaBarge district in the southwestern area for the Midwest Refining interests to go ahead with the construction in the spring of a pipe line from the field to Opal, on the Union Pacific Railroad, a distance of 40 miles. The gauging of wells is being done by the Midwest in conjunction with the Utah Oil Refining Co. and the California Petroleum Corp. The tests so far show that the California Petroleum wells alone are making in excess of the required 2,000 bbls. a day. The exact figures have not been announced, but the test is said to show around 2,100 bbls. for that company and an additional 400 to 500 bbls. from independent companies which will be included in the Calpet's sales to the Midwest. The size of the line was not determined pending the results of the test, but it will be either a 4 or 6-inch line. It probably will be owned by the Utah Oil Refining Co., a Midwest subsidiary, which will take the oil to be run in its refinery at Salt Lake City, Utah.

The LaBarge operation is quite an interesting one. Most of the geologists took the position that on account of the broken up conditions of the formations that no oil in commercial quantities would be found. However, drilling that has been in progress at intervals for more than 10 years, developed some small wells and some time ago the California Petroleum Corp., acquiring holdings of some of the pioneer companies, began an active drilling campaign. Some 63 or more wells have been completed as producers. The drilling is shallow and the limits of the productive area are not definitely established on account of the peculiarity of the folding. Some of the older formations have been completely tilted over and rest on top of younger formations. Prospecting extends over a wide area and some wells that should be failures under the ordinary rules of geology, come in as producers. At present there are about 20 wells drilling. The California Petroleum Corp. has a deep test down around 4,800 feet, but it is shut down until spring. The production is found at a shallow depth.

On the Oregon Basin structure in Park County, drilling is going ahead steadily in spite of cold weather.

One of the wells that is expected to be among the first to reach the Embar-Tensleep series, in which the Ohio Oil Co. opened up a flow of black oil in variously estimated quantities, is Charles E. Orchard's No. 1 Rue, 220 feet from the SW cor. Section 28-51-100. Orchard is drilling the well individually, though it has appeared in some of the scout reports under the name of the Wolverine Oil Co. At last reports the well was drilling in the Morrison at 2,250 feet. It spudded November 21 and made the present depth in 30 days. Drilling was slowed up some the past 10 days on account of the cold weather. The Ohio Oil Co. is expected to carry on an extensive campaign in the spring. It has one well drilling in its No. 1 Batson, Section 6-50-100, which is bottomed at 2,162 feet, and has rig up for No. 2 Wilson, Section 4-51-100. It is going back into its No. 4 Sonners, Section 8-51-100, bottomed at 2,080 feet, and drill it deeper with a rotary. Rigging up is now in progress. It also has rigs up on SW SE, Section 5-51-100, for its No. 1 Pauline, and on the NW NW, Section 4-50-100. These bring the number of operations up to 20, of which 11 are drilling and the others either have not yet spudded or are shut down. The deepest drilling well is the Cody Petroleum Co.'s No. 1 Klindt, SE SE, Section 7-51-100, which is bottomed at 2,768 feet. Since the discovery well encountered the pay at below 3,600 feet, it is apparent that several weeks must elapse before there are any completions.

Among the wildcats nothing out of the ordinary was reported except that the Criterion Oil Co.'s No. 1, SW cor. NE, Section 5-31-70, on the Irvine Dome, in Converse County, is reported to have a show of oil and gas in the Sundance sand at 3,581 feet. The well is shut down at this depth waiting for casing to shut off water encountered in the Dakota. Little progress has been made on the well for the past two months due to the efforts to cement off the water at 3,500 feet, of which there is 1,800 feet standing in the hole. Until this is shut off, little can be determined as to the extent of the showing in the Sundance. This operation is sometimes known as the Great Northern Oil Co., and is being drilled by W. H. Patten, and associates, of Casper.

New Mexico

The Texas Production Co.'s No. 2 Robinson, NW cor. SW, Section 25-16-31, eastern Eddy County, continued to hold the interest the past week. Drilling was suspended at 4,010 feet to make a test. After connecting up with the separator, the well flowed by heads and made 90 bbls. in eight hours. The gas pressure decreased some and the well then was swabbed, making 10 bbls. an hour without lowering the oil. Previous to these tests it was reported making 1,400,000 feet of gas and approximately 200 bbls. of oil. The gas sand was cut at 3,983-90 feet, and the oil sand at 3,990-4,010 feet. The sand was found just an even 100 feet deeper than in No. 1 Robinson, NE SW of the same section. Intentions of the company regarding the well have not yet been announced, but it is probable that it will be drilled a little deeper. Further developments are not expected to take place until after the holidays.

Shut In for Storage

Getty Oil, Inc.'s No. 1 Hinkle, NE cor. Section 23-20-29, in the Twin Hills district, 10 miles southeast of the Artesia Pool, after making a swabbing test, was tubed with 3-inch pipe and flowed natural, making 69 bbls. in the first 24 hours and 77 bbls. in the second 24 hours. The well was then shut in for storage. Getty Oil, Inc., is moving in for its No. 1 Ada Nicholas, NW NW, Section 25-20-29, a little more than a mile south and east of No. 1 Hinkle, the first of three wells to be drilled to test out the new area. Locations of the other two tests have not yet been announced, but it is expected that these will be spaced so as to determine the trend of the folding. No. 1 Nicholas will be drilled to the same horizon in which production was found in No. 1 Hinkle and upon the results will depend whether it will be carried deeper. The Pueblo Oil Co.'s No. 1 Gessert, NW, Section 1-17-31, near the Robinson wells, is shut down at 3,705 feet waiting for 8¼-inch pipe which will be run past the bit which was sidetracked after being blown 30 feet up the hole. This well will be watched closely on account of its location a little more than a mile south of the Robinson wells, when drilling is resumed. Several of the Eddy County wells are shut down on account of frozen lines and the snow which blanketed the region.

In Lea County, the Marland Oil Co. is moving in for a test on the Eaves permit in the SW cor. SE, Section 19-26-37, about 10 miles west of the Texas Production Co.'s No. 1 Rhoades, in the southeastern corner of the county. Henderson, Dexter & Blair's No. 1 Wyatt, SW SW, Section 34-17-33, was shot with 40 quarts at 4,988-98 feet without encouraging results, the hole filling up with water. It probably will be shot higher up within the next few days. The Midwest Refining Co.'s No. 1 State, NE NE, Section 9-19-38, on the Hobbs High, is drilling below 1,320 feet and at 1,300 feet was in a gray sand. Cecil Bordages' No. 1 Hughes, Section 27-19-38, is shut down at 620 feet. The Maljamar Oil & Gas Co.'s No. 2 Beardsley, SE NE, Section 15-17-32, has cleared up its fishing job at 3,965 feet and again is drilling.

The Curry County tests are shut down with the exception of the Petroleum Development Co.'s No. 1 Menard, Section 35-5-33, reported drilling at 300 feet, and Steinberger and others' No. 1, Section 21-3-35, which is reported drilling at 3,775 feet with 300 feet of water in the hole. In Chaves County, the five wells were all reported idle. In Quay County, the Ohio Oil Co.'s No. 1 Wells, Section 24-7-29, in the Jordan Ridge district, is drilling at 4,745 feet.

In the northwestern part of the State there was little of interest reported. The Continental Oil Co.'s No. 17 Santa Fe, Section 2-29-19, on the Rattlesnake Dome in San Juan County, is making some progress in its test to the Pennsylvanian, and is drilling below 4,122 feet. The A.

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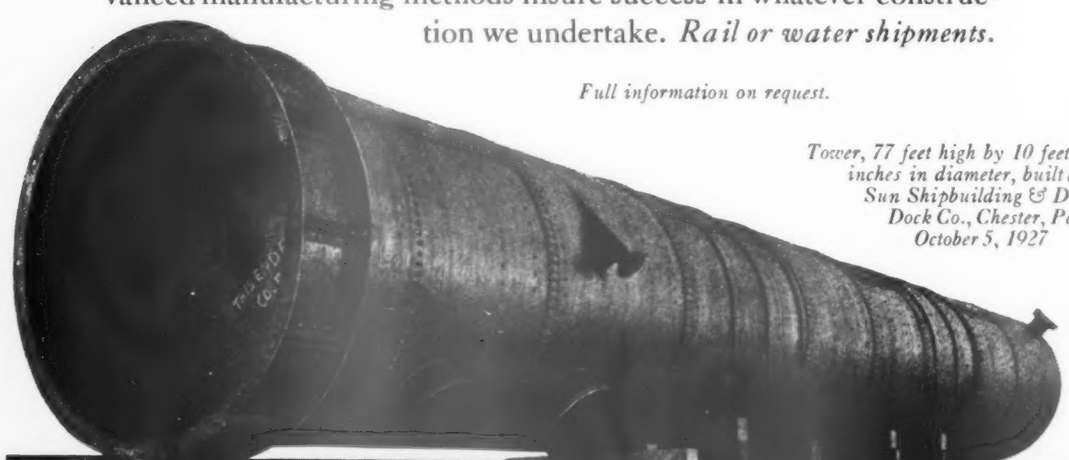

Tower, 77 feet high by 10 feet 6 inches in diameter, built by Sun Shipbuilding & Dry Dock Co., Chester, Pa., October 5, 1927

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CHESTER, PENNSYLVANIA

Johnson, trustee, test in the Kutz Canon district in Section 34-29-11, is drilling at 250 feet and is using gas from the Congress-National well, a quarter of a mile to the south, for fuel. The Huntington Park Oil Co.'s No. 1 Terwilliger, Section 29-30-9, in the Blanco district, has resumed drilling after running casing to 4,150 feet, but progress is slow on account of the gas pressure which makes it necessary to drill with a dry hole, it being impossible to keep water on the bottom. The drill is working in the Mesa Verde formation and the presence of sulphur fumes is said to be quite evident. This may mean that the hole will run into a coal seam shortly. Union Oil & Mining Co.'s No. 1, Section 8-29-9, is stringing a new cable. Two strings of tools have been recovered and no trouble is expected in releasing the third and last string. The San Juan Petroleum Co.'s No. 2 San Juan, Section 9-29-13, near Farmington's city limits, is drilling at 900 feet with the sand expected at around 1,100 feet.

Utah

The Mid-American Oil Co.'s test on Section 17-43-15, near St. George, in Washington County, is having considerable difficulty getting through the Kaibab limestone which is extremely hard. It has gone through 150 feet of this formation at a total depth of 915 feet. It has been necessary to shoot the hole at intervals of 3 feet and the bits have to be dressed four times a day. Two or three feet a day is about the fastest progress that has been possible since the formation was encountered and it is believed that an additional 35 feet will have to be drilled before there is a change.

The Diamond Oil Co.'s No. 3, NE Section 29-8-5, on the Diamond Fort structure, struck a sand formation at 100 feet which had a showing of oil. This sand was expected at 106 feet. The first objective is a 35-foot sand at 1,600 feet, followed by other sands which will be tested if necessary. The Embar Oil Co.'s No. 1 Big Six, Section 34-25-21, near Moab, continues to make progress slowly on account of the small hole, and is drilling in limey shale at 5,020 feet. At 5,015 feet, a small showing of live oil was encountered. The Texas Production Co.'s No. 1 Shipley, Section 5-27-14, is drilling in lime at 2,400 feet and is at an interesting depth. The Midwest Exploration Co.'s No. 3 Ashley Creek, Section 23-5-22, is still bottomed at 1,655 feet, on top of the big gas sand in the Morrison. When the 10-inch casing was pulled to remove a defective joint, it was found that the hole had gone crooked and redrilling is in progress at 1,390 feet to straighten. Same company's No. 1 Early, Section 13-14-6, Duchesne anticline, is still underreaming off the old bottom.

Colorado

Some interesting records are being made in pipe line construction in northwestern Colorado. A crew under Floyd Langworthy laid 1½ miles of 4-inch pipe for the Midwest Refining Co. in one day. The work was done in a snow storm with the thermometer showing the temperature to be below zero. The Midwest's line from the Iles Field to Craig is nearing completion, but it will not be ready for operation until after the 55,000-bbl. tank at Craig is finished. The Chicago Bridge & Iron Works has the contract and 25 men are employed. The bottom has been finished and riveting now is in progress. The Texas Production Co.'s link in its line from Iles to Craig will be finished according to present plans by the middle of January. Work on the Amarillo-Denver gas line also is progressing as rapidly as might be expected. The Williams Brothers Contracting Co., which has the contract for the northern end of the line, has opened a camp at Branson, Colo., making five crews engaged on the Colorado end. A crew will begin work shortly at Clayton, N. Mex., and another already is working out of Model, Colo. Approximately 800 men will be at work on the northern division shortly after the beginning of the year.

Drilling operations in Colorado for the week developed nothing of great importance and were slowed up considerably by the holidays. The most interesting test at present is the Texas Production Co.'s No. 10 Knowlton, Section 33-5n-91, on the Moffat Dome. This well, which was a failure in the Dakota and was deepened to test the underlying Morrison and Sundance sands, has been something of a puzzle. It encountered production in the Morrison, amounting to close to 400 bbls. a day in tests that were made under unsatisfactory conditions, and topped what is presumed to be the Sundance at 4,400 feet. Total depth is 4,427 feet. The presence of water in the fluid from the Sundance caused considerable concern. The fluid stands 2,000 feet in the hole. So far, only bailing and swabbing tests have been made. These were rather encouraging as they failed to exhaust the oil standing in the hole, but did exhaust the water. Tubing is to be run and a test by pumping will be made. This is the only well drilled down to the Sundance on the Moffat Dome and the outcome has been awaited with more than ordinary interest. The test already has proven that commercial production is to be found below the Dakota in the Morrison on the structure, while the performance of the well in what is considered the Sundance sand holds out considerable encouragement for production in that horizon. The top of the sand is very hard and tight and at other locations it may be found to be much softer and to yield up the oil more freely.

On the Iles Dome in Moffat County, the Shaffer Oil & Refining Co.'s No. 205 Yarg, NW NW, Section 26-4n-92, joint with the Yarg Producing & Refining Co., is drilling in the Frontier at 2,968 feet, the horizon having been topped at 2,923 feet. The Frontier was found a little lower than expected. It is ordinarily a water sand, but in the Yarg well showed only half a bailer per hour. A. L. Dade, manager of the pipe line department of the Shaffer interests, inspected the Moffat County fields the past week. This company had ambitious plans a few years ago looking to the construction of a refinery in this territory if sufficient production to warrant it was developed, and entering into the retail marketing business. If the Iles properties turn out as hoped for, this project may be revived. The company made a contract with the Yarg interests for the development of their holdings at Iles, but the Dakota sand failed to come up to expectations. Now, that two lower producing horizons have been discovered, the situation is more favorable for carrying out the original plans. The Yarg interests have the largest block of leases and permits on the structure. Other operations on Iles are mostly routine. Midwest Refining Co.'s No. 34-SD Parkinson, NW SW, Section 23-4-92, is still held up at 3,112 feet, and is jarring on spear to loosen. The three new locations announced last week on Midwest's acreage are not yet ready to spud. The Texas Production Co.'s No. 17 Parkinson, NW SW, Section 23-4-92, is making 247 bbls. of pipe line oil from the Morrison, and is cleaning out at 3,520 feet in the Sundance after setting the 4¾-inch casing. Same company's No. 6 Parkinson, NW NW, Section 23-4-92, is fishing for a bit at 2,590 feet, and its No. 13 Parkinson, NE SW, Section 22-4-92, is drilling in shale at 1,015 feet.

In Routt County, the Texas Production Co.'s No. 1 Wilbur Rule, SW NE, Section 5-6n-86, Tow Creek Dome, looked rather discouraging at 3,905-55 feet, when it swabbed 30 bbls. of fluid, a considerable part of which was water, but drilling was continued with more encouraging results. The hole is drilling in shale at 4,225 feet and has 1,300 feet of oil standing in the pipe.

The Continental Oil Co.'s No. 1 Hoye, SW NE, Section 34-9n-78, on the South McCallum Dome, in Jackson County, may be the next important completion in Colorado. It is bottomed at 4,480 feet, presumably on top of the first sand in the Dakota. Control head has been installed and preparations made for drilling in. The well has had several shows of oil and gas and looks very promising. It is the pioneer well to the Dakota on this structure as the other wells drilled in the past did not reach that horizon. The two drilling wells on the north structure still have several hundred feet to go before reaching the objective.

The Northeastern Colorado Oil Co.'s No. 1 State, Section 36-8n-55, on the Willard Dome, in Logan County, is drilling ahead in search of production in the lower Lakota sand at 5,508 feet, at which depth it is believed to be on top of the Lakota. The next week or two is expected to determine the fate of this wildcat.

In Larimer County, the Union Oil Co. of California's No. 1 Blunck, NW NW, Section 30-8n-68, on the Fort Collins Dome, is in the top of a water sand at 4,800 feet, but whether this is a stray, or the true Lakota is not yet apparent. This was a water well on the edge of the structure in the Muddy which is being drilled down to test the lower Dakota sands. Same company's No. 6 Buckeye, on the Wellington Dome, is still held up in the Muddy sand with a fishing job, which is delaying completion. The hole is about half full of oil.

The Phillips Petroleum Co.'s No. 1 Haskins, Section 23-29s-56, on the Red Rocks structure in Las Animas County, joint with the Reiter-Foster Oil Co. and the Texas Production Co. commenced spudding the past week, but had to shut down on account of trouble with the gasoline engine. Parts were rushed to the well by airplane from Oklahoma and drilling is being resumed.

The Parker Club's No. 1 Adams, Section 32-34-56, Las Animas County, has

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SECOND PRODUCING HORIZON FOUND IN TEST IN TURNER VALLEY FIELD

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Dec. 31.—In the Turner Valley Field, southwest of Calgary, Dalhousie Oil Co. No. 5, LSD 16, Section 30-19-2w5, has encountered at 4,810 feet a second producing sand in the Fernie shale horizon. The well is flowing by heads and making approximately 50 bbls. a day of high grade crude. The oil tests 53 degrees and is amber colored. The previous oil show in the Fernie shale was encountered at 4,525 feet; it was a 42 gravity crude, somewhat waxy, and amber in color. The first sand indicated a flush production of 250 bbls. a day, which, however, did not hold up; with the result that it was decided to drill deeper. At the present depth the well accumulates a pressure of approximately 300 pounds and then flows. The first official statement by J. H. McLeod, western production manager of the Dalhousie and other Imperial Oil, Ltd., subsidiaries, is as follows:

"Dalhousie No. 5 well struck a showing of crude oil in a brown sand in the Fernie shales at a depth of 4,810 feet, which is 285 feet below the pay streak in this well some months ago. The amount of oil cannot be estimated. The drillers are bailing sand and oil at the present time and will endeavor to drill the well deeper. The oil is much lighter in gravity than in the upper pay which was struck at 4,525 feet."

Two Potential Sands

The other details were given out later. The test is now being drilled deeper. It will likely be continued to the wet gas horizon in the Madison limestone. The results so far secured are important in that they demonstrate the presence in the southern part of the Turner Valley Field of two potential producing sands in the Fernie shale horizon.

Dalhousie Oil Co. No. 1, LSD 4, Section 18-20-2w5, has encountered some production of wet gas, apparently in or near the top of the Madison limestone. The extent of the gas flow has not yet been determined. Casing is being run to the bottom of the hole at 4,410 feet, preparatory to drilling deeper. It has now been determined that the Dalhousie No. 1, which was at one time thought to have got the Madison some 700 feet higher, is just entering that formation; it got the top of the limestone at 4,409½ feet. From approximately 3,600 feet the drilling has been done with a large diamond drill outfit as a precaution against the heavy gas pressures encountered in the deep lime. Royalite Oil Co. No. 4 naphtha gusher, less than half a mile south of Dalhousie No. 1 but considerably higher on the structure, got the top of the deep lime at 3,510 feet, just 900 feet shallower than the Dalhousie No. 1. The main wet gas horizon is around 200 feet in the Madison. In Dalhousie No. 1 the casing will probably be cemented in the top of the lime before drilling much farther into that formation. Dalhousie No. 1 is the old Southern Alberta No. 1 flowing well, which for a number of years produced high grade crude from the upper formations at around 3,500 feet. After the southern Alberta interests were taken over by the Dalhousie Oil Co., it was decided to deepen the well to the deep lime.

For the week ending December 17, Illinois-Alberta Oil & Refining Co., LSD 14, Section 12-20-3w5, reported a production of 751 bbls. of crude naphtha, being an average daily production of 107.28 bbls. Illinois-Alberta No. 2, same LSD, is reported at 1,145 feet and drilling. A new boiler is being secured from the east for this test.

Wet Gas Production

Spooner Oils No. 1, LSD 12, Section 13-20-3w5, is at 4,880 feet and drilling approximately 200 feet in the Madison limestone. At this depth the well has a wet gas production estimated around 3,000,000 feet a day. When the drill penetrated the gas sand, sufficient pressure was let loose to blow 1,000 feet of water out of the hole and lift the tools a considerable distance. The test is being drilled into the sand. The gas is reported to be decidedly wet, indicating a possible recovery of 1 gallon per 1,000 feet; which would give a potential recovery of 85 bbls. a day. The recovery product is apparently not the 73 Baume naphtha found in other deep wells but an amber colored light crude, testing 60.5 Baume; though this may be merely a temporary condition. Most of this crude comes with the gas, though a quantity has been brought up by the boiler. The test will be drilled deeper into the sand for a possibly larger production.

Vulcan Oils No. 2, LSD 11, Section 13-20-3w5, is at 4,190 feet and drilling, apparently in the Fernie shale horizon.

Calmont Oils No. 1, LSD 2, Section 1-20-3w5, is at 4,630 feet and drilling deeper after encountering some small shows of light crude. An oil showing was met at 4,494 feet and another at 4,550 feet, the oil at that depth continuing to show through 10 feet of sand. At 4,603 feet the drill left the sand to enter a horizon showing considerable coal. It is thought the coal seam was a marker between the Blairmore-Dakota and the underlying Kootenay, but the identification of the horizons is not yet positive. If it is correct, the Blairmore at this point is 621 feet thick, compared with 660 feet in the Royalite No. 4. The oil in the 10-foot sand between 4,550 and 4,560 feet is somewhat heavier than the ordinary

(Continued on Page 114)

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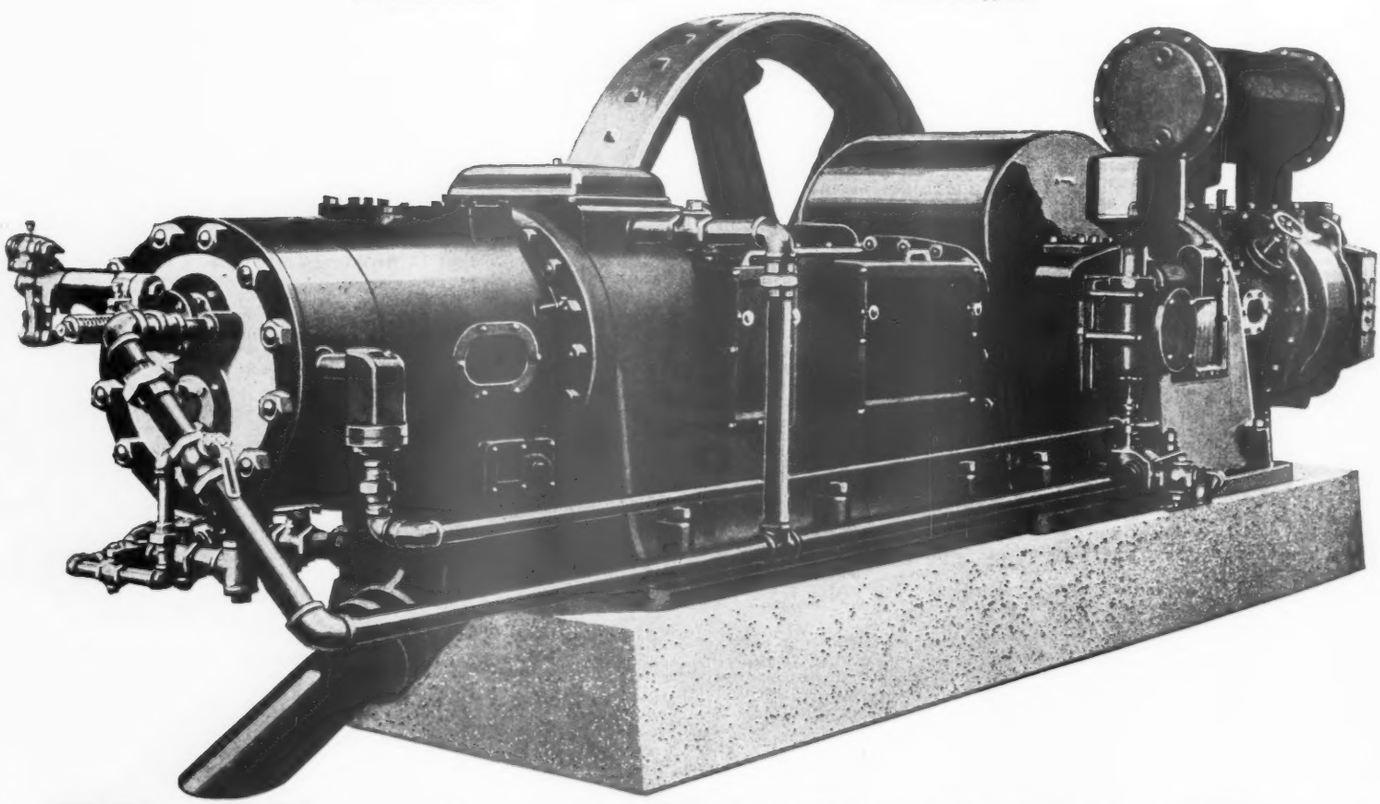

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Big Increase Expected in California

Production From Deep Sand Exploitation in Long Beach Field May Add 50,000 Bbls. Daily Early in the Year

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Dec. 31.—With the industry standing on the threshold of another possible big year from a production standpoint, it might not be amiss to make a short superficial analysis of conditions expected to exist during the first half of 1928. California started off the past year with a daily average production of 651,125 bbls. during January, 1927, due to the intensive development work in the town lot area of the Huntington Beach Field and, notwithstanding the rapid drilling which characterized subsequent operations in the Alamitos town lot section of the Seal Beach Field, the production trend during the entire year has been downward. This is evidenced by the fact that daily production during the latter part of December, 1927, had declined to approximately 624,000 bbls. This downward trend has just been brought to an abrupt end and production during the first half of 1928 will probably exceed the total output during the first six months of 1927. This is particularly interesting in view of the fact that state production during the first half of 1927 was larger than the total aggregate output during the last half. The outlook for the immediate future is also significant in that while 1928 will start off with a daily average production about 25,000 bbls. less than the output at the first of 1927, production during the coming year will be in the ascendancy instead of on the down grade as existed during 1927 when the state's yield was reflecting the normal decline incident to flush production.

No Return to Normal

There is a general feeling on the Pacific Coast that the industry east of the Rockies fails to appreciate the local situation in its entirety. This of course is not universal but to those in the Mid-Continent and along the Atlantic Seaboard who anticipate an early immediate return to normal in California it may be said that it just isn't in the cards.

There is not even a single ray of hope for substantially lower production since those dark days of 1923 when California was belching forth its millions of barrels. Every indication points to the fact that California's daily production will probably be well above the 600,000-bbl. mark during the entire year of 1928 unless additional curtailment measures are undertaken and if new fields keep coming in as regularly in the future as they have during the past year or two the present excessive production will continue over until 1929. It is interesting to note in this connection that only on a very few infrequent occasions has California's daily production dropped below 600,000 bbls. per day during the past four or five years.

California's aggregate daily production will probably go to somewhere in the neighborhood of 675,000 bbls. and may even reach the 700,000-bbl. mark before next summer instead of declining to 580,000 bbls. Long Beach is already up 25,000 bbls. per day since deep sand exploitation got under way in earnest a few months ago but this is really only an introduction to what will come early in 1928. This field is now doing around 117,000 bbls. per day and while estimates on the new high vary anywhere from 150,000 to 250,000 bbls. per day it looks as though 175,000 bbls. is plenty high enough at the present time. Thirty days from now one will be able to get a better line on the 1928 peak as the wells finished in the interim will afford a more tangible basis upon which to predicate future possibilities.

Although Long Beach will probably be the biggest single factor contributing to California's next major upswing which has just got under way the state's 1928 peak will not be limited exclusively to this field by any means as Seacliff, Ventura Avenue, Seal Beach, Potrero and Kern River will also exert some influence next year, the extent depending upon the amount of new work undertaken. The Seacliff Field, a recent discovery, will undoubtedly show a relatively favorable production during the early part of 1928 due to the development of the upper or state zone. Production from this horizon may reach 15,000 or 25,000 bbls. per day next year but the real potentiality of this field lies in the lower or projected Hobson zone which probably occurs somewhere around 4,000 feet on the apex of the structure. It is almost a foregone conclusion that some one will make a bid for production in this sand next year particularly if the upper horizon does not sustain continuous production. If the Hobson zone proves prolific this field may be doing 50,000 bbls. per day before the close of 1928. It must be remembered that there is nothing definite upon which to base this estimate except that the Chanslor-Canfield Midway Oil Co. encountered two separate and distinct horizons in the extreme eastern part of the field. The possible existence of a second or lower zone is also enhanced by the fact that practically every California field has at least two different sands and in most cases the deeper is the most prolific.

Ten Years' Supply

Ventura Avenue and Seal Beach are on the fence as both are closely held by large interests and future production can therefore be regulated up or down by additional drilling or curtailment. The outlook at present is for larger production in both fields, although there are some rumors of a further restriction at Ventura Avenue. This position cannot be justified in the face of present drilling as the Associated, Shell and Petroleum Securities are all carrying on a rather large drilling program. Potrero is still an unknown quantity so far as large production is concerned as the initial well failed to hold up. The Associated Oil Co., discoverer of this new field, has found two separate producing horizons and it is generally conceded favorable production may be anticipated on the apex of the structure. Kern River will not and can not upset calculations to any great extent although production may be increased about 5,000 bbls. per day due to increased drilling along the West front. Mount Poso, Round Mountain, Granite Canyon and several wildcat areas, particularly the Union Avenue, Fruitvale and Edison areas in Kern County, may get into the play during 1928 but if any of this group is opened up it will be very late in the year before any appreciable production is built up.

In conclusion it may be said California will show a very substantial increase in production during the next several months, the upward swing having definitegot under way during the past week. It is absolutely impossible to estimate future production more than six months ahead due to the variable factors involved but it is evident state production may continue at a high rate all during 1928 and if any more prolific fields are brought in during the next six months we might have to hibernate well through the early part of 1929. There has been a very marked move among California oil companies to increase their crude oil resources and while the future crude supply is naturally of paramount importance and bound to play a big part in the days to come we can not anticipate a return of the old days when any one or group of companies can expect to monopolize conditions as there is at least a ten year's

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well, location—	S-T-R	Depth	Status
Associated, No. 1 Cypress, Potrero	34- 2-14	5,408	recemented
Smith & Carpenter, No. 1 Smith	35- 2-14	5,282	rebuild rig
Hurst Oil Corp., No. 1 Inglewood, Los Angeles Co.	28- 2-14	3,772	suspended
Mont. Park Oil Co., No. 1 Browning, Mont. Park	26- 1-12	3,460	hd. sd. drilling
Associated, No. 1 Patterson, Pico	13- 2-12	4,300	hd. sd. drilling
Circle Oil Co., No. 1 Pomeroy, Manchester	23- 3-14	4,280	suspended
Shell, No. 1 Mission, San Fernando	4- 2-15	4,985	hd. sd. drilling
Sou. Calif. Drlg. Co., No. 1 Matteson, El Segundo	1- 3-15	4,870	suspended
Carr, O. K., No. 2 Foster, San Juan Capistrano	13- 8- 8	4,230	suspended
Thomason & McCoy, No. 1 Rinz, Saugus	27- 5-16	1,610	suspended
Andrews, Otis, No. 1 Lancaster, Los Angeles Co.	23- 8-13	Rig	rigging up
Southwest Pet. Co., No. 1 Ramsauer, Watts	4- 3-13	4,302	suspended
Security Pet. Co., No. 1 Lynwood, Los Angeles Co.	13- 3-13	Rig	rigging up
Dominguez Ext., No. 1 Compton, Los Angeles Co.	27- 3-13	5,510	resume work
San Clemente Oil Co., No. 1 Peck, Hawthorne	20- 3-14	5,575	hd. sd. drilling
O'Donnell, J. E., No. 1 Dupree, Hawthorne	29- 3-14	5,304	suspended
White Behr, No. 1 Watson, L. A. County	21- 4-14	4,012	set pipe
Shell, No. 1 Allec, Placentia	31- 3- 9	5,495	hd. sd. drilling
Buttrum, F. W., No. 1 Richfield, Orange Co.	36- 3- 9	Rig	rigging up
Son, C. A., No. 1 Pinkerton, Orange Co.	5- 5-11	3,620	suspended
Olympic Ref. Co., No. 1 Sunset Beach, Orange Co.	19- 5-11	Rig	rigging up
Getty, Geo. F., No. 1 Seal Beach, Orange Co.	14- 5-12	Rig	rigging up
Stein, Leo, No. 1 Long, Orange Co.	21- 5-11	5,135	suspended
Shell, No. 1 Stern, Orange Co.	22- 3-10	3,091	hd. sd. drilling
Hemet Pet. Co., No. 1 Ward, Riverside Co.	8- 5- 1	1,893	hd. sd. drilling
Fuller & Gray, No. 1 Fuente, L. A. County	14- 2-10	Rig	rigging up
Anchor Oil Co., No. 1 Hudson, Los Angeles Co.	18- 2-10	2,395	suspended
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	1,209	hd. sd. drilling
Pet. Securities, No. 1 Fairview, Orange Co.	3- 6-10	4,360	hd. sd. drilling
Davenport Oil & Gas Co., Nos 1 San Marcos, San Diego Co.	25-12- 2	350	hd. sd. drilling
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	280	sd. drilling

IMPORTANT NORTHERN CALIFORNIA WILDCATS

General Pet. No. 2 Ochsner, Kettleman Hills	26-22-18	5,550	br. sh. drilling
South Coalinga, Well No. 1, Kettleman Hills	35-24-18	2,930	pipe trouble
Monoclinal Dev. Co., Well No. 1, Kettleman Hills	7-21-21	4,306	br. sh. drilling
McPhail, Hugh, Well No. 1, Kettleman Hills	13-24-18	2,095	plugging
Milham Explin., No. 1 Kettleman, Kings Co.	2-22-17	6,150	suspended
Shell, No. 2 Berlywood, Moorpark	32- 3-20	6,084	testing
Continental Oil Co., No. 1 Burnham, Ventura Co.	22- 5-18	3,560	hd. sd. drilling
Star Petroleum, No. 2 Canet, Ventura Co.	13- 3-23	4,371	hd. sd. drilling
Standard, No. 1 Camarillo, Ventura Co.	29- 2-20	5,720	fishing
Standard, No. 1 Saticoy, Ventura Co.	9- 3-22	1,580	to abandon
Petroleum Sec., No. 1 Diablo, Ventura Co.	26- 5-18	3,840	br. sh. drilling
Parkford, L. A., No. 1 Nettrabern, Ventura Co.	5- 2-18	4,002	rigging tertiary
Shell, No. 1 Strathern, Ventura Co.	6- 2-18	1,410	hd. sd. drilling
Miley Oil Co., No. 1 Red Mountain, Ventura Co.	7- 3-23	980	suspended
Richfield, No. 27 Piru, Ventura Co.	35- 5-18	1,902	suspended
Superior Oil Co., No. 1 Fillmore, Ventura Co.	33- 4-20	1,117	hd. sd. drilling
McAdams, J. E., No. 1 Buttonwillow, Kern Co.	26-29-23	3,012	br. sh. drilling
Milham Explin., No. 2 Buttonwillow, Kern Co.	8-28-23	4,662	gas well
Milham Explin., No. 2 Kern, Kern Co.	8-28-23	2,214	hd. sd. drilling
Milham Explin., No. 3 Buttonwillow, Kern Co.	7-29-24	4,150	suspended
Morris, F. L., No. 1 Semitropic, Kern Co.	16-27-23		location
Pacific Eastern, No. 1 Fruitvale, Kern Co.	21-29-27	3,850	little showing
Pacific Eastern, No. 1 Bakersfield, Kern Co.	6-30-28	5,060	oil show
General Pet., No. 1 Edison, Kern Co.	5-30-28	4,006	looks good
Getty, George F., No. 1 Edison, Kern Co.	22-28-29	3,717	plugging back
Midway Northern, No. 1 Edison, Kern Co.	29-29-30	1,271	sd. drilling
General Pet., No. 1 Granite Canyon, Kern Co.	21-27-28	1,738	500 bbls.
Union, No. 1 Granite Canyon, Kern Co.	28-27-28	1,781	275 bbls.
Frame, Bruce, No. 1 Paso, Kern Co.	18-26-28	2,146	br. sh. drilling
Shell, No. 1 Mon Bluff, Kern Co.	3-28-28	3,578	hd. sd. drilling
North American, No. 1 Wallace, Delano	5-25-26	3,703	fishing
Fresno Madera Oil Co., No. 1 Clovis, Fresno	18-12-21	3,915	hd. sd. drilling
Barneyberg Oil Co., No. 1 Brown, San Luis Obispo	25-32-14	2,291	hd. sd. drilling
Richfield, No. 1 Wreden, San Luis Obispo Co.	10-29-17	2,601	hd. sd. drilling
Dabney Oil Co., No. 1 Carissa, San Luis Obospo Co.	15-29-17	2,230	hd. sd. drilling
Union Oil Co., No. 1 Huasna, San Luis Obispo Co.	34-32-15	Rig	Rigging up
Shell, No. 1 Cowell, San Mateo Co.	8- 6- 5	5,290	hd. sd. drilling
Shell, No. 1 Rossi, Petaluma	8- 5- 6	280	sd. drilling
Thomas & Hammill, Well No. 1, Alameda Co.	16- 3- 3	1,470	suspended
Buttrum, F. W., No. 1 Odin, Santa Barbara Co.	20-25-27	1,968	suspended
Gorham, G. O., No. 1 Orcutt, Santa Barbara Co.	33-10-34	Mtl.	building rig
Becker, Geo. F., No. 1 Summerland, Santa Barbara	33- 4-25	3,060	water trouble
Petroleum Exp. Co., No. 1 Modoc, Santa Barbara	20- 4-27	1,460	sd. sh. drilling
Birch Oil Co., No. 1 Porterville, Tulare Co.	13-20-26	2,900	show. gas
Fort Wayne Synd., No. 1 Goodcell, Madera Co.	22-10-17	2,250	fishing
Continental Oil Co., No. 2 Smith, Colusa Co.	31-18- 4	4,005	hd. sd. drilling
Continental Oil Co., Well No. 1, Santa Clara Co.	31-11- 4	1,092	sd. sh. drilling

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	148,322	21,332	162,914	23,273	9,828,534	10,970,784
Fuel oil	79,544	11,363	.....	.....	6,868,317	7,359,155
Diesel and gas oil	149,999	21,428	.....	.....	2,525,150	3,301,731
Gasoline	.....	.....	322,982	46,140	9,099,422	6,835,945
Tops	.....	.....	.....	.....	.....	374,504
Coastwise—						
Crude oil	426,889	50,984	482,762	68,966	23,080,340	23,222,720
Fuel oil	394,976	56,425	186,692	26,670	13,058,136	11,699,970
Diesel and gas oil	4,450	636	50,452	7,207	420,315	181,483
Gasoline	269,245	38,464	136,171	19,454	9,740,273	7,699,233
Kerosene	14,750	2,107	.....	.....	254,822	197,008
Tops	25,175	3,596	.....	.....	284,550	501,520
Exports—						
Crude oil	60,401	8,629	127,407	18,201	2,362,140	3,941,968
Fuel oil	271,754	38,822	660,410	94,344	27,595,424	18,075,192
Diesel and gas oil	3,824	546	70,576	10,082	1,409,301	565,379
Gasoline	335,105	46,444	230,095	32,871	5,613,970	4,504,640
Tops	.....	.....	.....	.....	302,303	290,912
Kerosene	50,126	7,161	68,029	9,718	2,209,896	2,927,015

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Fuel oil	.....	.....	.....	.....	.....	78,653
Diesel and gas oil	.....	.....	.....	.....	975,036	1,915,670
Gasoline	71,980	10,283	.....	.....	2,114,753	1,928,368
Tops	.....	.....	.....	.....	.....	72,698
Lubricants	.....	.....	.....	.....	439,357	407,860
Coastwise—						
Fuel oil	3,871	553	.....	.....	4,794,292	5,273,719
Diesel and gas oil	15,680	2,240	.....	.....	254,413	.....
Gasoline	53,176	7,597	60,407	8,630	4,856,401	4,550,531
Kerosene	2,882	412	.....	.....	219,120	304,676
Exports—						
Fuel oil	124,760	17,823	103,928	14,847	2,754,620	2,929,037
Diesel and gas oil	11,911	1,702	.....	.....	119,729	.....
Gasoline	19,680	2,811	64,165	9,166	2,762,288	2,164,272
Kerosene	.....	.....	.....	.....	947,295	1,936,476
Lubricants	.....	.....	.....	.....	61,408	66,706

supply of crude actually proven up in either virgin territory or untouched deep sands.

Long Beach

Completions have been rather infrequent in the Long Beach Field during the past few weeks but a careful check indicates the big parade will start in the very near future. The 9,940 bbls. of new production added during the past few days is generally considered as the forerunner of a very substantial increase expected during the next three or four months due to exploitation of the deep sand. There are 206 new wells and deepening projects actually under way with the lower zone as their objective and something like 15 or 20 should be completed during January. It is needless to say the daily production will show a substantial increase during that period. Practically all of the major companies holding acreage in this district have one or more wells nearing completion and there is a very noticeable tendency to increase the scope of work.

Two exceptionally large wells were completed during the week and if this is any criterion of what may be expected of subsequent completions this remarkable old field may go higher than some anticipate. The best producer finished was Edens & Wallace's No. 2 Long Beach, recompleted in the deep zone a few days ago at 5,920 feet. It showed an initial production of 3,690 bbls. of exceptionally clean 30.4 gravity oil and 4,000,000 feet of heavily saturated gas daily. George W. Johnson, who drilled several wells out in the Los Cerritos or northwest extension when that area was under development, chalked up his first deep sand completion in the older section by bringing in No. 1 Taylor flowing 3,130 bbls. of clean gravity oil daily from 6,019 feet. This rejuvenated well, a former upper zone producer, is also yielding 2,000,000 feet of wet gas averaging approximately 3 gallons of casinghead to each 1,000 feet of gas treated. Johnson, who has followed the destinies of this field closely, came to the conclusion several months ago that the lower zone would prove highly prolific and he backed his judgment with real money by buying the Crest and Babcock leases. Subsequent drilling has confirmed his opinion and these two leases could now be turned over at a very substantial profit. He will develop both and since they are in proven territory large production can be anticipated. Havenstrite & Baker have just brought in their No. 1 Hancock flowing 3,120 bbls. of clean 30.4 gravity oil and 2,000,000 feet of wet gas daily from the deep zone at 5,971 feet.

Next Completions

A check of well depths indicates the probable completion of four or five new wells within a few days, practically all of which give evidence of resulting in large production. The Richfield Oil Co., the officials of which showed excellent judgment in acquiring practically every piece of favorable acreage submitted, anticipates the completion of at least two wells within three or four days and both, judging by their position on the structure, should show excellent production. The Pan American has three immediate potential producers and this trio should also be completed shortly as all of them are below the 6,000-foot level. The Shell, discoverer and largest single operator in the Long Beach Field at present, should finish two new wells soon. This concern is concentrating almost entirely on new work and will not make any definite bid for deep sand production until about the end of January, at which time the 17 wells under way may be expected to boost the company's production. The California Petroleum, second largest holder of productive acreage in the Long Beach Field, is running 12 strings of tools and five new rigs are in course of construction.

The General Petroleum should have two new deep sand wells on production within ten days and additional completions can be expected from time to time. J. E. O'Donnell, one of the few operators who operated in the Los Cerritos extension at a profit, will undoubtedly be a very important factor in deep sand production during the next 90 days. He is running six strings of tools, No. 65 having been spudded in a week or so ago. The Union Oil Co. should also develop substantial production in this field within 60 days. There are a number of independent operators with one or more potential producers nearing completion in the deep sand and one or two of them should list completions within 15 days.

Seacliff

The Pan American fittingly celebrated the season by completing its second producer in the recently discovered Seacliff Field of Ventura County. The company's new producer was No. 3 Hobson, which came in under a natural flow doing 916 bbls. of exceptionally clean 31.2 gravity oil daily. No. 3 Hobson, down to 2,557 feet, is producing from 21 feet of heavily saturated sand. The most interesting feature in connection with this new well is that the oil produced is exceptionally clean, in contrast to the initial production of the discovery well. Another rather favorable feature is that the well is showing a normal consistent casing pressure, 340 pounds. The company is still working on No. 1 State, the discovery well, which developed water trouble shortly after completion, and it is probable it will be plugged back and given a test from the upper part of this zone. The performance of this well tends to indicate there is an intermediate water sand in the state zone and this belief is strengthened by the fact that No. 3 Hobson secured clean production in the upper 21 feet. No. 1 State, it will be recalled, took a penetration of approximately 400 feet but failed to secure clean commercial production. The Pan American has four other immediate potential producers nearing completion and barring mechanical trouble they should all be tanking oil within 15 days. The Chanslor-Canfield Midway Oil Co., General Petroleum and Miley Oil Co. should also finish new wells, soon.

The completion of No. 3 Hobson as a successful commercial producer early in the week will hasten the construction of pipe line facilities as it will not be possible to move any considerable quantity of crude out of this area. Attention was directed several weeks ago to the probability that a pipe line might be laid from this new field to intercept the Pan American or General Petroleum's main trunk early in the new year. This line would probably be routed via Ventura Avenue to pick up production in the latter area. There were no new wells finished in the Ventura Avenue Field during the week but a check indicates the possible completion of five or six new producers in proven territory during January. The Associated has two exceptionally promising drillers, one, No. 102 Lloyd, in the extreme eastern part of the field, required the use of exceptionally heavy mud to prevent a premature blowout. The Petroleum Securities and Shell also have good prospects of increased production from new wells within two or three weeks.

Kern River

Two new wells were finished on the West Front of the Kern River Field, although one, Kent & Whittier's No. 1 in Section 26-28-27, has apparently not secured an effective water shutoff at 2,465 feet. The present production, 145 bbls. of 15.3 gravity oil is cutting about 25 per cent. The Bishop Corp.'s No. 4 in Section 23-28-27, is relatively clean, the initial production of 250 bbls. daily from 2,067 feet cutting only approximately 3 per cent. Drilling operations along the Kern Front were exceptionally conspicuous by the new work undertaken. Construction work was started on 10 new rigs, notwithstanding the seasonal rainfall interfered with operations. The Petroleum Securities has three new locations in Section 22-28-27, and spud will probably be made shortly. The Brownmoor Oil Co. has three new rigs going up in Section 16-28-27, while the General Petroleum is making preparations to spud in three new wells on the Sill property. The Chanslor-Canfield Midway Oil Co., Standard and St. Helens Petroleum are also rigging up three new wells each.

Huntington Beach

Three wells were put on production in the Huntington Beach Field and although only a limited amount of development work is under way additional completions may be anticipated. Four new wells are scheduled to get under way within 10 days and these will be supplemented by several more, the locations for which have recently been staked. During the early stages of development no attempt was made to produce the first or upper oil zone in the town lot section as the lower horizon was yielding gusher production but there has been a rather marked tendency during the past 60 or 90 days to produce from this shallow sand. These 2,100-foot wells require but a limited amount of pipe and can be finished at a minimum of time and expense. The oil yields a good cold test lub stock and no difficulty is experienced in disposing of production. The wells come in anywhere from 150 to 300 bbls. per day and usually settle to consistent 75 or 100-bbl. pumpers.

Two of the completions listed during the week were finished in the upper zone, one, the Western Drilling & Production Co.'s No. 2 Huntington, showed a rather favorable output. It registered an initial of 175 bbls. daily from 2,198 feet, the hole having been finished with a 6¼-inch liner carrying 230 feet of perforated. This company has one other well under way in the town lot area but it will be carried on down for a test in the lower zone. The Key West Oil Co. got a 165-bbl. pumper in the shallow zone at 2,197 feet when No. 4 Loftin was put on the beam. The World Oil Corp. recompleted No. 7 M. & B. in the deep sand and secured a 700-bbl. producer after redrilling and deepening the hole from 3,870 feet to 4,340 feet. No. 8, a new well, is rotating ahead at 2,370 feet. Four new wells are nearing completion in the town lot area and barring mechanical trouble this quartet should be tanking oil within 10 days. Duncan & Lee are scheduled to finish Nos. 2 and 3 in the upper sand while Bremmer & Reddy and Christianson & Dunn will make a bid for production in the lower zone.

Dominguez

The Union put No. 20 Callender in the Dominguez Field on a production test but it was a rather small well pumping 225 bbls. daily from 4,192 feet. Drilling operations in this field have been practically negligible during the past two years and while the daily production has not shown any very great decline this is due to both the Union and Shell injecting dry gas into the formation under pressure to replace the dissipated pressure in the oil zone incident to normal production. Four key wells are being used, two by the Shell and a similar number by the Union. The former is pumping dry gas into Nos. 23 and 37 on the Reyes lease while the latter is utilizing No. 14 Callender and No. 14 Hellman. Drilling operations in the Rosecrans Field are at a low ebb due to the desire of the Barnsdall and Union to retard development work until a more opportune time. The Union concluded negotiations recently for the acquisition of the lease and holdings of the Olinda Land Co. in the Fullerton or Brea Olinda Field and while no further work is contemplated for the present, the 14 wells acquired will probably be overhauled and cleaned out to stimulate production. Approximately 150 bbls. per day of shallow production was acquired, the gravity averaging approximately 18 degrees. The state corporation commissioner recently granted a permit to the Waste Paper Disposal Co., a nonprofit organization organized by the Birch Oil Co., Brea Canyon Oil Co., California Petroleum, Fullerton Oil Co., General Petroleum, Shell, St. Helens and Union Oil Co. for the purpose of eliminating possible oil and salt water contamination incident to drilling operations in the Fullerton Field. The newly incorporated company will construct a pipe line system and treating plant to cost somewhere in the neighborhood of $150,000. The process will be

(Continued on Page 122)

WEST VIRGINIA HAS BEST WELL OF WEEK IN EASTERN FIELDS

D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Jan. 2.—The last week of the old year proved disappointing, both as to the number and size of the wells completed. In the entire eastern fields not a large producer was completed. Operators will go into the new year without any district of any importance, since all have been defined. After the holidays they will have nothing to do but go back to the old fields and continue to drill odd locations that were passed over during the more exciting days when gushers were of frequent occurrence. Now they are a minus quantity in the old fields.

There is not much to look forward to in the way of strictly new producing territory. All sections have been pretty thoroughly tested, only a few districts in the lower southwest West Virginia counties have large tracts that may possibly furnish new pools.

The deep sand territory in southeast Ohio still has possibilities. Many of the farms in this territory have been tested and even if productive nothing more has been done in the way of development work. They will be held until such time as the market warrants their developments.

No Large Producers

West Virginia completed one fair well and southeast Ohio nothing better than a 50-bbl. producer. The southwest Pennsylvania fields completed none.

On Washington Creek, Union district, Wood County, West Virginia, Sweeney & Nelson have completed in the Berea grit a second test on the G. H. Ralston farm. It is good for a little more than 100 bbls. a day.

In Harvey district, Mingo County, the Old Colony Oil & Gas Co. has drilled No. 18 on the Henry Closterman estate into the top of the Maxon sand. It began to flow at the rate of 7 bbls. an hour and after filling all available tankage was shut in awaiting pipe line connection by the Eureka Pipe Line Co. No. 17 on the same tract is a gasser in the Maxon sand. It is a gasser good for 1,500,000 feet. Later this well will be drilled deeper.

On the south fork of Hughes River, Murphy district, Ritchie County, Morris & Co. have completed a test on the John Warner farm. It is a light gasser in the salt sand. On McFarlan Creek, same district, Cochram & Hayes have completed their No. 3 on the McGregor heirs' farm. It is dry in the Big Injun sand and has been plugged in that formation and will be shot and tested in the salt sand. In Grant district, the South Penn Oil Co. has completed the rig for No. 6 on the W. H. Mason farm.

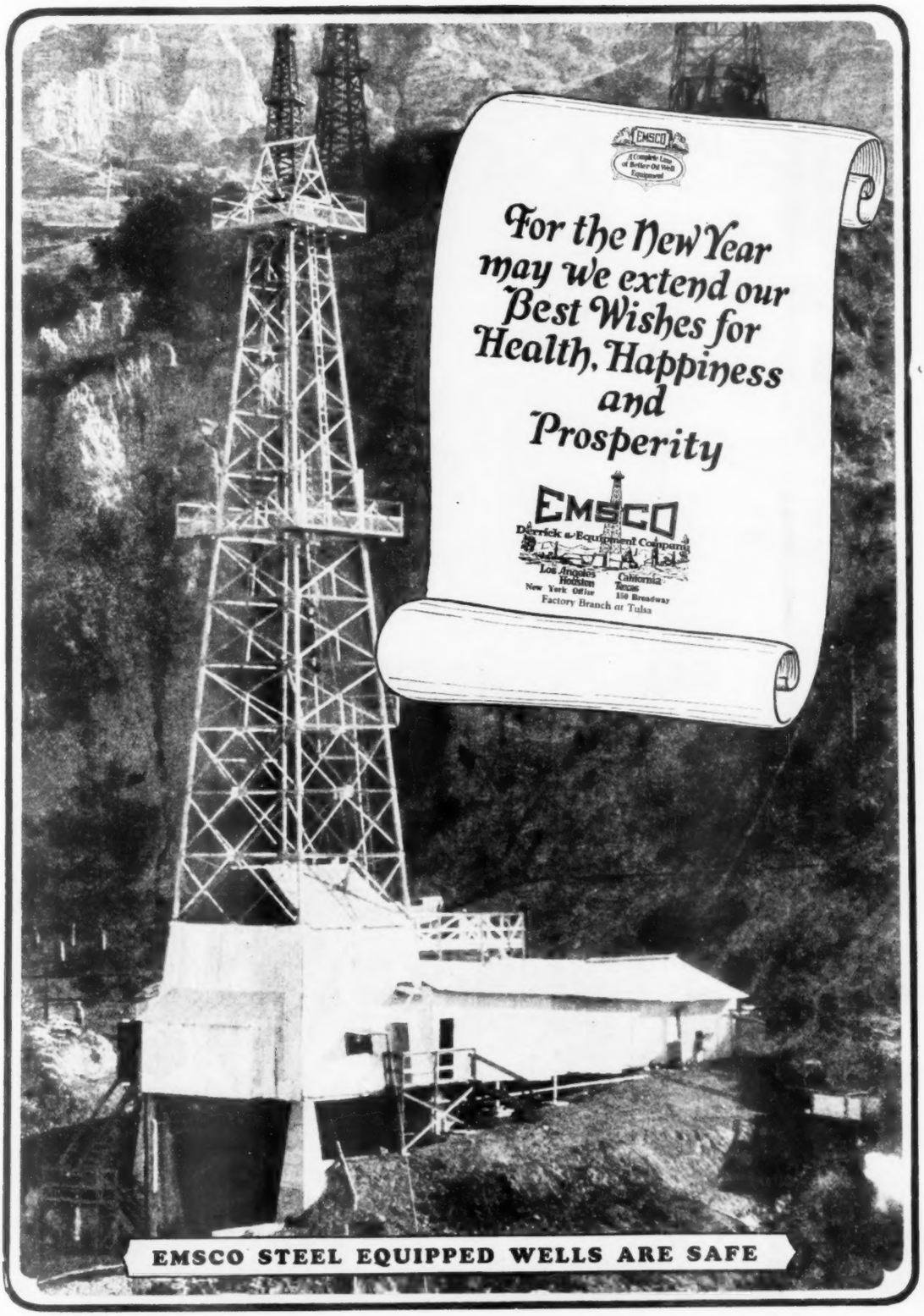
Wetzel County

In Green district, Wetzel County, Carr Brothers have completed a test on the E. F. and W. S. Morgan farm. It is a gasser in the Big Injun sand good for 1,500,000 feet. In the same district and county, J. S. Snyder and others have completed in the same formation a test on the same farm, and it is a duster.

Calhoun County

In Lee district, Calhoun County, McIntosh & Co. have completed a second test on the Amy Haymaker farm. It is a gasser in the Big Injun sand. In Sherman district, McIntosh & Miller's second test on the A. Shook farm is a gasser

(Continued on Page 162)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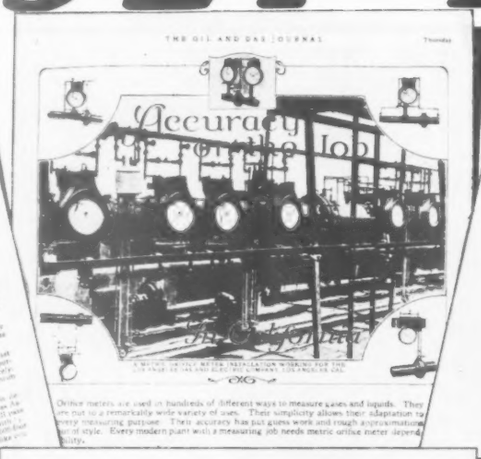

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Work Holding Up in Kentucky Fields

Production Increasing Steadily in the Western Division. Development Work in the Eastern Section Lagging

By Whit
Staff Correspondent, Kentucky-Tennessee

BOWLING GREEN, Ky., Jan. 2.—Work is holding up remarkably in Kentucky at this time, especially in the western division and big things are looked for after the holiday season is over in the territory comprising Ohio, Daviess, McLean and possibly Union and Henderson Counties.

Only three producers out of the ordinary were developed during the week and they were all confined to the Ambrose Pool, in Ohio County. They were No. 3 Bartlett heirs; No. 5 Hill Rhodes and No. 2 Ollie Ozell farms, each showing an initial production of 125 bbls.

Production is increasing at a nice rate in the western division, coming mostly from the Ohio County fields, although Daviess County must be closely watched as the well on the Hayden farm, in that county looks like the finding of another rish pool like the Ambrose Pool in Ohio County, to say nothing about the good well of Dimmick Brothers in McLean County. When the pipe line is completed to these two wildcat ventures, a nice increase in production is looked for. All of the land in the Dimmick and Bristow sections has been under lease and several big transactions have taken p'ace both in the sales of leases and purchases of royalties. Oil operators look to this section to develop some big production and after the holidays it has been given out there will be a great deal of drilling of a wildcat nature. This applies to the Hayden area in Daviess County as well, a'so in the Buford area in the western part of Ohio County, several miles west of the Ambrose Pool.

The production of the Ohio County Field shows a steady gain during the entire year. The November output of this county amounted to 159,011.35 bbls. against 154,942.81 bbls. for October, a gain of 4,068.54 bbls. Production in Daviess County shows a decrease of 311.26 bbls., the November production being 4,743.20 bbls., and that of October was 5,054.46 bbls. Hancock County produced 1,691.78 bbls. for November and 1,501.64 bbls. for October, a gain of 190.14 bbls.

Week's Work

A summary of the week's work in the Kentucky fields show 22 completions, 11 producers with an initial production of 515 bbls., 9 dry holes and 2 gas wells. Compared with the previous week there were seven more completions, five more producers, 272 bbls. more new production, two more dry holes and the same number of gas wells. The wells were distributed by counties and districts as follows:

County—	Comp.	Wells	Prod.	Dry	Gas
Ohio	11	7	456	4	0
Daviess	3	1	50	2	0
Johnson-Magoffin	2	1	5	1	0
Estill	2	1	2	1	0
Floyd	2	0	0	0	2
Warren	1	1	2	0	0
Allen	1	0	0	1	0
Total	22	11	515	9	2
Last week	15	6	243	7	2
Difference	7	5	272	2	0

Eastern Kentucky

Development work is lagging in the fields of eastern Kentucky with little chance of revival until the coming spring season opens up. In District 21, Floyd-Knott Counties, the Distill Martin Oil & Gas Co. drilled in a nice gas well at a test on the Sada Allen farm, and the Ivyton Oil & Gas Co. also found a good gasser in a test on the Helen Martin farm, same district.

In Johnson-Magoffin Counties, District 29, Hamlin, Tanner and others' second well on the Milt Tackett farm, pumped an initial of 5 bbls., while the B. F. Oil Syndicate found a dry hole in a second test on the H. B. May farm, District 31, same counties.

In the Irvine Field of Estill County, District 8, the Waco Oil Co. has a 2-bbl. pumper in No. 17 on the A. J. Rawlins farm, and the Superior Oil Corp.'s No. 6 on the Henry Miller, was a duster.

Western Kentucky

The heavy play of the drill in Kentucky is centered in the Tri-County Field comprising Ohio, Hancock and Daviess Counties, with excellent prospects in Henderson, Butler, Webster, Muhlenburg, Hopkins and Union Counties to the west and south of the Tri-County Field.

F. E. Black of Corydon, Ky., writes as follows: "We have drilled in and found a very good well on the R. H. O. Daniel lease, 3 miles southwest of Corydon, in Union County, Kentucky, at a depth of 637 feet, top of sand with 9 feet of pay. We shot the well last Monday and the fluid came up 157 feet in one hour (6¼-inch casing) with very little water. I moved my rig 800 feet southwest on the same lease and now drilling. I have 547 acres of leases here which looks good, and there is a probability of opening up a very good field. There is a drilling rig on an adjoining lease to the southeast and down around 300 feet, with another rig on the southwest, practically in the same vicinity, which will commence development in a few days. Parties from the eastern part of the state have secured several hundred acres of leases and will move a rig on the same in the next 30 days. This is a good grade of oil 37 gravity and I am planning on putting in another drilling rig the first of the year."

Oil Development

More interest is taken in the oil development in this section than in any of the other oil fields in the state, says the Owensboro Messenger. Beginning in a modest way about five years ago, with the discovery of a few small wells, the industry has grown quietly and unostentatiously with the development and enlargement of the production area from a limited area near where the counties of Daviess, Hancock and Ohio join. It has spread in all directions, mostly toward the south and west, until drills are being operated in four counties, McLean having been added to the list with the discovery of a good well in that county, one of the best in the field.

"Outsiders are being attracted to the field by the reports of the finds, and leases that have heretofore been considered worthless are now bringing good prices. Many landowners in the oil region have been raised from poverty to affluence by the royalties reserved when leases were given and many investors in leases have been able to turn over their holdings at a great advance when they have concluded to share their good fortune with others clamoring to buy.

"Lease buying is more or less a gamble, for some have found to their sorrow that they have bought a dry hole, while others have struck it rich by the discovery of producing wel's. There has been almost a total absence of trickery in the exploitation of leases and the organization of oil development companies. For the most part men have put in their own capital in amounts that would not break them if they lost the entire sum. Many of these have found their investments very profitable.

"It is but right to sound a word of caution. In the anxiety to purchase leases, some investors have not examined clearly the titles to the territory involved. Some have learned to their sorrow that they have bought a cloudy or bogus title. It would be well for prospective buyers to secure the advice of a reputable attorney before parting with the purchase money. In this way much trouble may be averted."

Ohio County Wells

Activity still prevails in numerous parts of Ohio County and the way things look it will continue even during the winter months, or as long as material can be handled over the territory. Pipe line connections will soon be made with the well on the Gilbert Jolly lease, west of Buford in Ohio County and several miles west of the Ambrose Pool, also the Vince Steele farm at Buford and then these two wells will be given a chance to show their real worth.

Some surprises come in Ohio County as well as other places and two of them have shown up recently, when Marvin Jordon and others brought in a dry hole on the Westerfield farm, between Buford and Pleasant Ridge, in the western part of the county and the test of James C. Ellis on the Murray Roberts lease in the Belles Run area, to the northwest of the Ambrose Pool, which also came in a duster. Both locations were looked upon as almost sure for good production.

In the Ambrose Pool the Creek Drilling Co.'s No. 3 on the Bartlett heirs 81 acres, south of the big pool, showed an initial production of 125 bbls. In this well a string of 732 feet of casing was set on top the sand and drilled through the sand at 785 feet and went to a total depth of 796 feet and shot with 200 quarts.

In the same pool, Daugherty and others' No. 5 on the Hill Rhodes 150 acres, a string of 726 feet of casing was set; sand found from 726 to 758 feet and shot with 120 quarts, the initial production being 125 bbls. Toward the northwestern part of the same pool, Young & Lee's second well on the Ollie Ezell 80 acres, also showed an initial of 125 bbls. A string of 685 feet of casing set in this hole, sand from 694 to 720 feet and sent to a total depth of 739 feet and shot with 100 quarts.

In the Kelly Pool the White Plains Oil & Gas Co. set a string of 418 feet of casing, got sand from 418 to 432 feet and went to a total depth of 435 feet at a second test on the Ada Kelly 64 acres and shot with 60 quarts, the well reported being good for only 1 bbl. No. 3, same farm, is drilling.

In the Colyer Pool S. H. Russell and others' No. 1 on the Latney Rhodes farm, is reported at 10 bbls. initial; in this well 406 feet of casing was set, sand from 406 to 435 feet and total depth of

(Continued on Page 158)

CENTRAL WEST OPERATORS PLANNING FOR ACTIVE CAMPAIGN IN SPRING

By Whit
Staff Correspondent, Central West

FINDLAY, Ohio, Dec. 30.—This is the season of the year when work always slackens in the old fields and seldom shows much of a revival until the roads and weather conditions are right for spring, but if talk through the fields is any criterion, the coming season should prove an active one. During the past few months much leasing outside of defined limits has been done which will require drilling operations in the early summer and at the same time many old leases that have been abandoned are being taken up with a view of testing them out between abandoned locations. Whether or not this will prove profitable remains to be seen, but during the past few years a large amount of the work done has been within or close to old-time production, especially in the old Lima Field of northwestern Ohio, Indiana and Illinois. Central Ohio is another proposition altogether, for this territory is drilled more for natural gas at this time than for oil but quite often nice producing oil wells are found in the hunt for gas and this always brings about additional activity. There are still large areas of untested territory in many parts of the four states covering the Central West Field. The well recently found at Muskegon, Mich., looks like a forerunner of a new development of value in the Wolverine state, as it flows its oil and a number of tank cars of crude have been shipped from the well.

The best of the late strikes in the old Lima Field of northwestern Ohio was made by the Real Oil Co. in its second test on the Ben Wierwell farm, Section 29, Washington Township, Auglaize County, near the town of New Knoxville, about 4 miles south and 4 miles east of St. Marys and southward from the producing line of the old development of years ago and a good enough producer to encourage active development in that part of the field, as the well's initial production amounted to 50 bbls., and wells of this caliber in the old Trenton Rock formation are seldom found in this late day. Northwest of St. Marys several miles but in defined territory, the Bachelor Oil Co. is drilling No. 14 on the William T. Seibert farm, Section 3, Salem Township, same county. Stelzer & Boyd are drilling No. 5 O. F. Benton farm, same section. In Noble Township, the Petroleum Producing Co. is drilling No. 3 Joseph Mallory farm, Section 9, and over in the northeastern part of Auglaize County, Abbot Brothers are still working at their test on the Harrison Goddard farm, slightly in advance of the Roundhead Pool, this pool being in Hardin County.

Several miles south of Perrysburg in Perrysburg Township, Wood County, in the Colt Pool, George L. Haubert and others' No. 4 well, 200 feet from the south line and 650 feet from the west line of the Catherine Smith farm, in the southwest quarter Section 29, topped the sand at 1,235 feet and at 55 feet in the sand showed an initial production of 6 bbls. In Troy Township, northwest of Woodville, also in Wood County, Lewis Hille's No. 3 on his own farm, Section 13, pumped 10 bbls. the first 24 hours. In Lake Township, D. J Klinman abandoned his No. 1 on the Edward B. Emch farm, Section 35. In Perry Township, north of Fostoria, W. H. Dennis and others are starting No. 6 on the Bressler Brothers farm, Section 6. Near Woodside in Freedom Township, same county, the Ohio Oil Co. abandoned old No. 43 on the Fuhr-Villwock No. 8 lease, Section 34. In Montgomery Township,

(Continued on Page 158)

The over production of Seminole was brought about largely by the use of the most modern methods of drilling, producing and cementing that science has yet devised. This is true conservation.

HALLIBURTON OIL WELL CEMENTING CO.
Duncan, Oklahoma

MEN KNOWN IN OILDOM

Homer D. Holler

Homer D. Holler, who is doing notable work in connection with soil corrosion problems at the Bureau of Standards, was born November 25, 1889, at Newark, Ohio. He won his B.S. degree at Denison University in 1911; his M.A. degree in chemistry at the Ohio State University in 1912, and the Ph.D. degree in chemistry at the same university in 1917.

Mr. Holler became assistant and later associate chemist at the Bureau of Standards, 1915 to 1919, and was physical chemist with E. I. du Pont de Nemours & Company, from 1919 to 1920, where he also was consulting engineer. He was instructor in physics at Columbia University in 1920 to 1921.

From 1921 to 1923, as consulting engineer, Mr. Holler was assistant professor in physics at Brooklyn Polytechnic Institute. From 1923 to 1925 he was employed as chemist at the Bureau of Standards and lecturer in electrochemistry at George Washington University.

Mr. Holler was employed by the Phillips Petroleum Company from 1925 to 1927, as physicist and in the latter year he became research associate, Cast Iron Research Association, conducting investigations at the Bureau of Standards.

He has engaged in research work and as consultant in electroplating process manufacture of dry cells and storage batteries, electrical rectifiers and corrosion problems, also seismographic development in prospecting geological structure.

PERSONAL PARAGRAPHS

Mr. and Mrs. Fred Cameron, of Black Diamond, Alberta, are spending a month with relatives in Petrolia, Ontario.

* * *

Ralph Johnston, of the Sinclair Oil & Gas Company land department, spent the holidays with relatives at Dallas, Tex.

* * *

A. E. Wallace, vice president of the Pacific Eastern Production Company, is back at work following an operation on his throat.

* * *

A. Owen Jennings, president of Illinois-Alberta Oils, Ltd., is returning to Chicago after spending the holidays in Calgary, Alberta.

* * *

Angus Sutherland, who has been drilling in the Turner Valley Field, is spending a few weeks in Oil Springs and Petrolia, Ontario.

* * *

Jack Sloan, of Kansas City, Mo., formerly with the Black Steel & Wire Company, has been making an extended visit in Tulsa, Okla.

John F. Cailloux, president of American Iron & Machine Works, Inc., Oklahoma City, Okla., spent two weeks in South Texas and Louisiana.

* * *

John McFadyen, general superintendent for Ohio Oil Company affairs in the Rocky Mountain region, is in the Oregon Basin Field for a time.

* * *

Freeman W. Burford, vice president of the Crystal Oil Refining Corporation, of Shreveport, La., has been spending a few days at Tulsa, Okla.

* * *

D. J. Griffin, of the Ohio Oil Company's warehouse department at Casper, Wyo., spent the holidays in Findlay, Ohio, with friends and relatives.

* * *

R. S. Ellison, vice president and general manager of Midwest Refining Company, spent the holidays in Colorado Springs, Colo., with Mrs. Ellison and his mother.

* * *

Milton Brennan, representing the Emsco interests of Los Angeles, Calif., has been spending some time in the Rocky Mountain region in the interest of his company.

* * *

Waite Phillips, chairman of the board of the Independent Oil & Gas Company, has completed a trip of eastern cities, visiting Washington, D. C., and New York.

* * *

Talbot C. Wildman, president of the Wildman Petroleum Company, with headquarters at Fort Worth, Tex., spent the holidays with relatives in New York.

* * *

W. S. Smullin, of Los Angeles, Calif., is expected home soon from a prolonged trip into Arizona, New Mexico and Texas, extending as far as Houston.

* * *

Paul S. Swisher, retired from the Eureka Pipe Line Company and now located at Mannington, W. Va., spent the holidays with his old friends at Pittsburgh, Pa.

* * *

J. L. Wiley, formerly librarian and translator for the Solvay Process Company, has joined the staff of Arthur D. Little, Inc., chemists and engineers, of Cambridge, Mass.

* * *

R. W. Wallace, field superintendent for the Prairie interests in Montana, was called to the bedside of his son, Dwight Wallace, who is seriously ill at Lincoln, Neb., at the university.

* * *

Charles Pishney, for the past two years connected with the Carter Oil Company as statistician, has resigned to again become associated with the Marland Oil Company in a similar capacity.

* * *

H. A. Platt, assistant superintendent of the Reid Gas Engine Company, Oil City, Pa., is back in Oil City after having made an extensive trip through the Louisiana, Arkansas and Texas oil fields.

* * *

Robert L. Jones, who has been city salesman in Tulsa, Okla., for the National Supply Companies for the past 11 years, has joined the sales force of the D. F. Connelly Agency, effective January 1.

* * *

Nathaniel Jackson, district sales manager of the Austin Machinery Corporation, Salt Lake City, Utah, has been in the Mid-Continent area making a survey of conditions in the petroleum industry.

* * *

W. C. Teagle, president of the Standard Oil Company of New Jersey, has been elected a member of the executive committee of The White Company, Cleveland, Ohio, maker of White trucks.

* * *

E. C. Williams, Ramsay professor of chemical engineering at University College, London, is about to vacate his chair on accepting an important post in the Royal Dutch-Shell group. His new business will be the active development of a Shell research organization in California.

* * *

C. P. Clark, vice president of the Clark Brothers Company, of Olean, N. Y., manufacturers of drilling engines, compressors and other oil field machinery, has arrived in London on his first European trip to make a study of European oil conditions, including a visit to Rumania.

F. J. Huffman, Pittsburgh, Pa., vice president and treasurer of the Penn Mex Fuel Company, has returned from a visit to the company's properties in Mexico, and reports the outlook for the company as very good.

* * *

R. F. Ley, sales manager of the Oil Field Equipment Company, is on a trip to Chicago and the Southwest. He spent the holidays at his home in Kansas City, Mo., and will return to New York early in January.

* * *

M. T. Rathvon, superintendent of operations for Argo Oil Company, has sufficiently improved from a recent illness to be in his offices again in Casper, Wyo. Mr. Rathvon was for a time threatened with pneumonia.

* * *

Vernon M. Marsten, petroleum geologist, has returned to his Farmington, N. Mex., offices from California, where he has been on business. Mr. Marsten states that he expects greatly increased activity in the San Juan Field.

* * *

Hugh Smith, who has been the engineer in charge of the construction of the Pampa-Wichita pipe line, is being transferred to the gas division of the Empire Companies, and will work with V. C. Jarboe in connection with gas transportation.

* * *

H. S. Shuey, secretary of the Merco Nordstrom Valve Company, San Francisco, Calif., has returned from a transcontinental trip in connection with the activities of his company. His mission took him to New York and Washington, D. C.

* * *

J. L. Dougan, field superintendent of Utah Southern Oil Company, at Moab, Utah, is at Garland, Wyo., inspecting operations at the company well there. He will return by way of Denver, Colo., for the transaction of a few days' business.

* * *

R. B. Leggett, of Casper, Wyo., manager of operations for the Texas Production Company in Wyoming, has joined Mrs. Leggett and their son in Fort Worth, Tex., where they were guests of Dr. and Mrs. L. M. Whitsitt, parents of Mrs. Leggett.

* * *

Walter English, who recently resigned from the geological department of the Standard Oil Company of California in order to engage in the development of aerial geology, will open a general consulting office in Los Angeles, Calif., in the near future.

* * *

A. H. Smothers and E. L. Lucas, of the Standard Oil Company of California's pipe line department, were hosts to a number of other company employes at the annual Christmas jinx of the Chamber of Mines and Oil, held at the Ambassador Hotel, Los Angeles.

* * *

M. T. Scarry, veteran oil well driller, who has been drilling in the Artesia, New Mexico, Field, and acting as field superintendent for the MacDonald Nitroglycerin Company, for the past three years, has returned to his home at Willshire, Van Wert County, Ohio, in the old Lima Field.

* * *

C. Fralich, petroleum engineer for Wentz Oil Corporation, of Ponca City, Okla., spent several weeks at the Colorado School of Mines at Golden, Colo., studying oil field flooding under the direction of Prof. R. C. Beckstrom of the Department of Petroleum Engineering.

* * *

L. F. Bayer, vice president of the Associated Oil Company in charge of manufacturing, has returned to the San Francisco, Calif., offices of the company after spending several days at the Tulsa, Okla., offices of the Tidal Refining Company. Mr. Bayer was formerly vice president of the Tidal company.

* * *

Among those present at the dinner of the Institution of Petroleum Technologists at London, was Alfred Wirth, of Alfred Wirth & Company, Erkelenz, Rhineland, who has just returned from a tour of the three principal Russian oil areas. Mr. Wirth found that great strides forward had been made in modernizing equipment during the past few years. This has resulted in production increasing to such an extent that existing refining and transport facilities are now somewhat inadequate and the Russian oil authorities are taking vigorous measures to remedy this state of affairs.

2,030 Men—
More Than 7 Acres Floor Space
—Back of Hughes Service

HOUSTON PLANT

Divisions	No. Men Employed	Floor Space
Rock Bit Dept.	641	28,800
Tool Joint Dept.	178	21,600
Drilling & Refining Valve Dept.	126	66,400
Foundry	144	40,400
Forge Shop	64	12,600
Heat Treating Department	77	15,360
	1,230	185,160
Other Departments	639	106,120
Total	1,869	291,280
Oklahoma City Plant	54	10,000
Los Angeles Plant	107	20,000
Grand Total	2,030	321,280

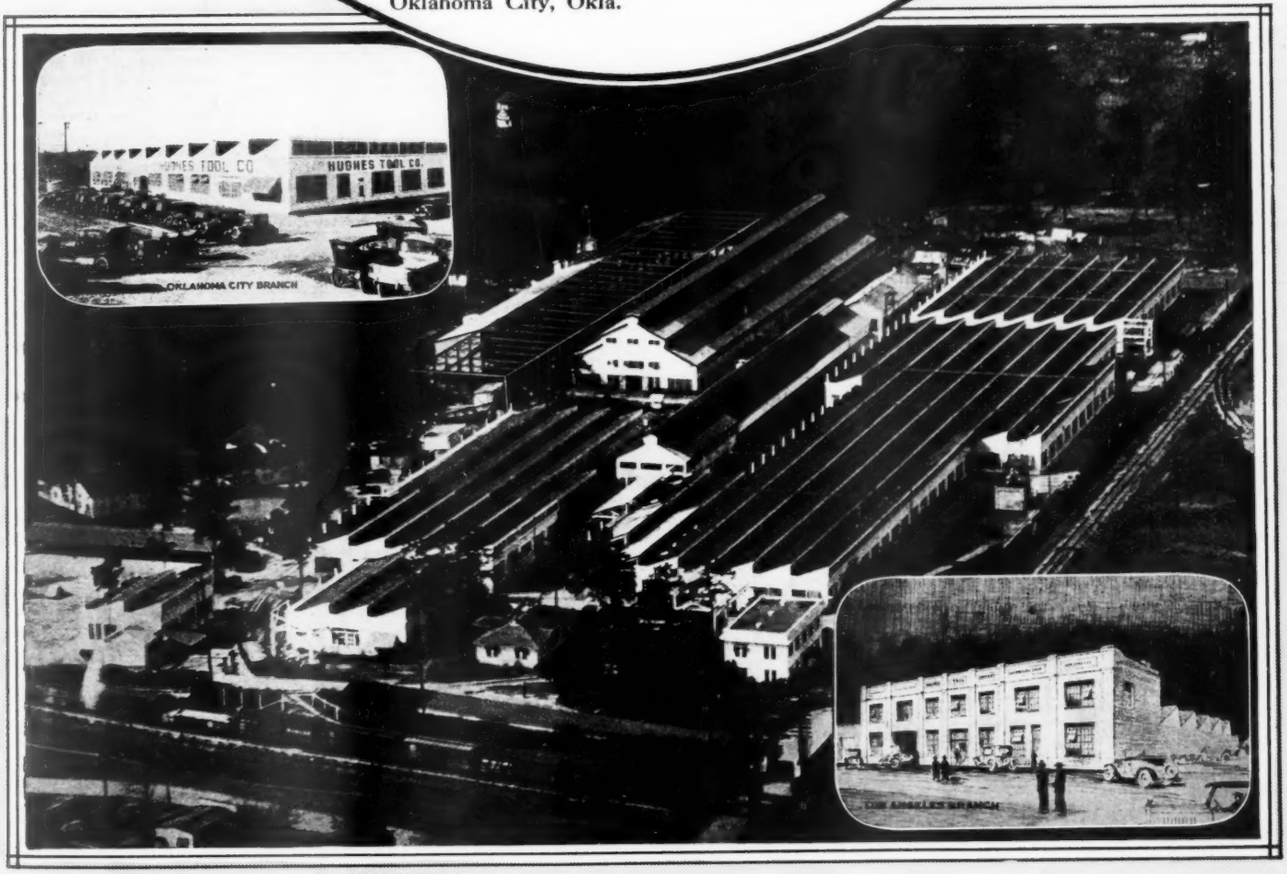
Over 7 acres of floor space.

HUGHES TOOL COMPANY

Main Office and Plant
HOUSTON, TEXAS

Branch Plants
Los Angeles, Calif.
Oklahoma City, Okla.

Export Office
New York City, N. Y.



Ideal Distillation Unit in Refining

Several Factors to Consider in Designing Equipment. Flexibility Important. Describe Pipe Still Operation in Detail

By A. G. Peterkin, Jr.*
The Atlantic Refining Co.

An ideal distillation unit for petroleum refining might possess characteristics somewhat as follows:

The heating element would waste as little heat as, let us say, a steam boiler built along the most approved lines, and operate with as great a heat input per square foot of heating surface.

The heat recovery equipment would be designed to recover in useful form the highest percentage of the heat input consistent with the desired separation of the constituents of the material under process. This means that heat would be recovered at the highest available temperatures and wherever possible from condensing vapors.

The oils produced would require no further distillation to render them suitable for processing of a different kind or for sale.

Each element of equipment not essential to the main purpose of the operation would effect an annual economy at least, shall we say, one-fifth its cost.

In the past, heat applied either directly or in the form of steam has been the major part of distillation costs by reason of furnace limitations and of the incompleteness of separation in any one distillation operation. If the above requirements are fulfilled the cost of labor, repairs, etc., will also tend towards the minimum, and no less the cost of installation.

In a small refinery with a number of materials to distill differing widely in boiling range and in character and yield of product, a choice must be made between, say, one large flexible unit and several smaller ones for more particular purposes. Sacrifices are involved in either choice. Nor will dilemmas of the same kind be escaped in those larger refineries whose individual operations are invariably in terms of 10,000 bbls. a day. The yields of products differ radically even with one type of crude, either due to differing composition or to changing market demands. A still during its life is likely to handle many types of crude. The larger the unit the more desirable flexibility becomes in any refinery.

How close we may come to this ideal depends so far as heat input is concerned on the type of furnace; in regard to heat recovery and separation, on the fractionating equipment. The net heat consumption, however, depends on the combination of both, since in this respect they are not entirely independent.

Leslie, in his article in the April Journal of Industrial & Engineering Chemistry, shows that single flash evaporation compared with a number of successive flashes at progressively higher temperatures will give equivalent separation at lower final temperatures and with a less total heat input into the charge. Peters later points out that, while this is true, considerations of heat recovery, cost of equipment and capacity limitations favor more than one flash, particularly when the percentage of distillate is large. What follows deals with the single flash method, illustrating in some degree its advantages and limitations. The furnace from which the data here used was obtained is shown diagrammatically in Figure 1.

Furnace Design

The furnace was designed to burn oil, or pulverized coal. The tubes, 4 inches outside diameter, form two continuous passes, 1,850 feet long, joined at the inlet and outlet of the still. A steam superheater is inserted in the convection section. The surface is proportionized in the various sections as in Table 1.

The heat balance from such a furnace under normal operating conditions, heating five thousand 50-gallon barrels of Mid-Continent crude, 36 gravity, from 350 degrees to 800 degrees Fahrenheit, burning pulverized coal, as shown in Table 2.

The heat input calculated from the temperature rise of the oil, entering 13 per cent vaporized at 350 degrees Fahrenheit and leaving 85 per cent vaporized at 800 degrees Fahrenheit is 78 per cent.

The furnace conditions were comparatively mild, the temperature below the roof tubes 1,636 degrees Fahrenheit over the convection section 1,358 degrees Fahrenheit. The flue temperature is 490 degrees Fahrenheit and the CO_2 content 8.65 per cent. The furnace was capable of better performance both as to throughput and heat efficiency.

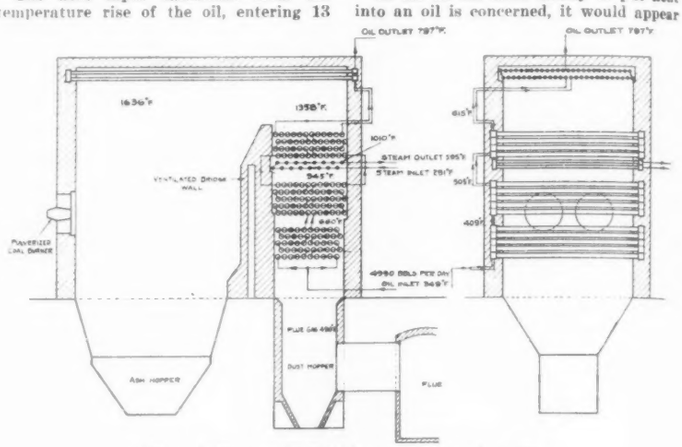


Figure 1—Furnace for 5,000-barrel capacity pipe still.

Table 1—Distribution of Heating Surface
(One Pass)

Section—	Length feet	Bare tubes external area square feet	Extended surface area square feet
Radiant	741	775	775 (241 degrees projected)
Convection—			
Top	336	352	714
Middle	420	439	1,680
Bottom	350	367	2,100
Total	1,847	1,933	5,269

Pipe Still Advantage

So far as the mere ability to put heat into an oil is concerned, it would appear that the pipe still has taken us far along the road to our ideal. Within the experience of almost the youngest of us, in the initial distillation on such as oil a heat input of 32 per cent was common practice and anything better than 50 per cent a rare thing. Table 3 gives comparative heat figures between pipe stills under normal operation with various fuels and what may be considered at least good every day boiler practice.

The stoker-fired pipe still furnace put 56.5 per cent of the heat available in the fuel into the oil, the ashpit loss accounting, however, for some 14 per cent.

(Continued on Page 94)

*Before American Petroleum Institute.

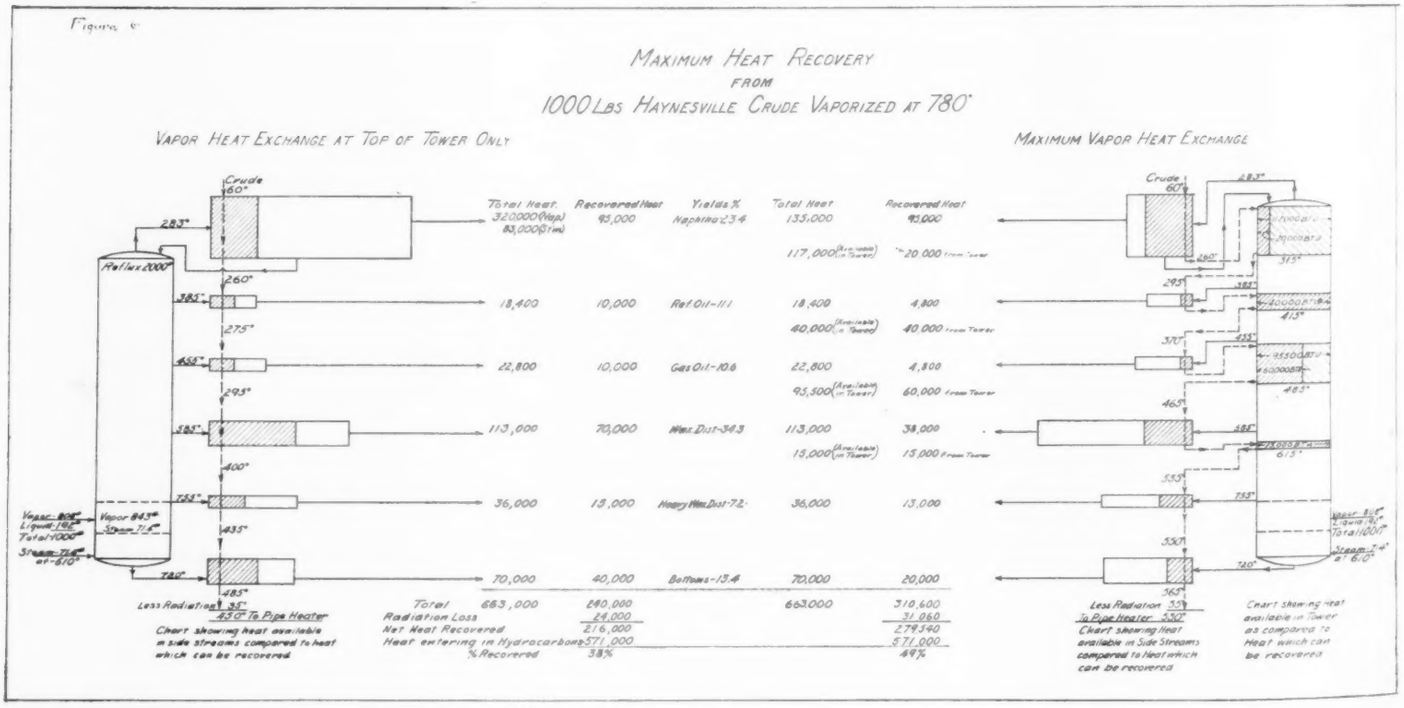


Figure 6—Maximum heat recovery from 1,000 barrels Haynesville crude vaporized at 780 degrees Fahrenheit.

Baker Cleanout Bailer: Left: Regular Type. Right: Regular Type with blade between points.

Baker Chisel Bottom Bailer for hard formations. Regular Cleanout Bailer easily transformed into Chisel Bottom Bailer by unscrewing its shoe and replacing with Chisel Bottom Shoe.

Baker Saw Tooth Bottom Bailer fits Baker Cleanout Bailer bodies of corresponding size. Designed for formations which do not easily break up sufficiently to go through opening in Chisel Bottom Bailer.

Faster Bailing— Cleaner Bailing!

This demand is fully met by the

BAKER

CLEANOUT BAILERS

Unquestionably the most efficient device for cleaning out a well under ordinary conditions that has been developed.

The two-point shoe having tapered and curved points cause the Bailer to rotate as it strikes the formation. Being close to the valve opening the sand, shale or gravel is rapidly and thoroughly picked up.

The valve is constructed entirely of steel, and rests on the shoulder in the shoe below the threads. The extremely large opening in valve seat, and its closeness to the end of the shoe permits a maximum amount of cutting to enter.

The Baker Cleanout Bailer is the result of close and exhaustive field study, and its outstanding superiority is evidenced wherever used.

Fully described in special folder. Send for it.

BAKER CASING SHOE COMPANY

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Natural Gas Developments

OKLAHOMA GAS RATES TO FORMAL HEARING

OKLAHOMA CITY, Okla., Dec. 31.—A formal hearing will be necessary before a settlement can be made with the Oklahoma Natural Gas Co. on the proposed reduction gate rates on natural gas to the 60 state cities now being served by that company, it was announced by Fred Capshaw, chairman of the State Corporation Commission, at the termination of a two-hour conference with officials of the gas company.

Possibility that a reduction might be reached by a friendly agreement between the commission and the gas company vanished when a comparison of figures of the two parties in the conference was made.

The Oklahoma Gas company introduced figures contending it should receive profit from a $22,485,000 investment, while the Corporation Commission conceded the company's valuation to be but $15,000,000.

In order to make an equitable profit from the sale of gas for domestic and industrial use exclusive of drilling gas sold in oil fields, the company must sell its gas at a gate rate of 34 cents per 1,000 cubic feet, the gas company officials contended. The present rate from which the reduction of from 5 to 10 cents per 1,000 feet was proposed, is 35 cents.

KANSAS CITY PROMISED TWO NEW GAS LINES

KANSAS CITY, Mo., Jan. 2.—Improvements aggregating almost $500,000 which are expected to give Greater Kansas City a new supply of gas, have been completed by the Doherty interests and now are undergoing the final tests before being put into use. The improvements consist of two extra 16-inch pipe lines extending from a new station at Gavin Cut near Lenexa, Kans., to Kansas City.

One line hooks into the Kansas City, Mo., distribution system at Seventy-first Street just east of State Line and the other connects with the Kansas City, Kans., system at Carlisle road. The distribution companies have augmented their lines to carry the extra flow of gas into the city. Besides the two new pipe lines, two older lines of the same dimensions still are in service.

Officials of the Doherty companies said the two new lines would bring into the city under all average conditions an additional 40,000,000 cubic feet of gas daily if needed.

To make the best use of the new lines the metering station at Gavin Cut has been completed. An engineer will be in charge of the station at all times to man the booster pumps and take readings of the meters.

From the meter station to the gas fields in Kansas and Oklahoma the company has two large lines.

OIL COMPANIES ENRICH KERN COUNTY TREASURY

BAKERSFIELD, Calif., Dec. 31.—Fourteen checks totaling $1,453,679.30 have been received at the office of C. E. Day, county tax collector, as first installment taxes by the big oil companies operating in Kern County. The largest check was that of the Standard Oil Co. for $762,918.53. The next largest check was that of the Kern County Land Co. for $158,686.76.

The Associated Oil Co. paid the third largest check of those received for the first installment, its impost totaling $129,899.86. The General Petroleum paid a tax of $89,780.22, and the Chanslor-Canfield Midway Co. paid $60,615.26 into the county coffers.

CARRYING GAS AT HIGH PRESSURES; 1,000 POUNDS PER INCH CONSIDERED

By Glenn O. Carter
Consulting Engineer, The Linde Air Products Co., New York

With the continued development of extensive natural gas pipe line systems and the simultaneous development of centralized production of manufactured gas with pressure distribution to distant points, the problem with regard to the best operating pressures has assumed great importance. The parallel with transmission of electricity may properly be drawn. And it appears that high pressure transmission of gas is relatively advantageous in the same way as high tension transmission of electricity.

Just as the electrical industry requires very large transformers to carry the current to high voltage, so does the gas industry require pumping stations.

On the other hand, the use of high tension electricity very materially reduces the cost of the transmission system, in fact permits the carrying of electricity for hundreds of miles, whereas with low voltage the economic distances were short.

It seems from a study of the transmission of gas that by the use of high pressures very material savings can be effected and thus the transmission of gas for long distances may be made feasible.

At the present time some pipe lines operate with pressures as high as 450 pounds per square inch and deliver in excess of 60,000,000 cubic feet per day. Still other pipe lines under consideration contemplate the delivery of more than 100,000,000 cubic feet per day.

Normal Pressure

For the sake of this discussion, let us assume that normal pressures have been approximately 400 pounds per square inch dropping down to 100 pounds. For the first step in increasing pressure let us assume an initial pressure of 1,000 pounds per square inch, with reduction to 500 pounds, then a recompression which incidentally will be only in the ratio of 2 to 1. Let us also assume a length of line of 100 miles in both cases.

With regard to a study of pipe line capacity, it should be stated that numerous formulas have been developed, but it is believed that the gas industry still uses Oliphant's formula.

$$Q = 42a \frac{P_1^2 - P_2^2}{L}$$

For natural gas it must be remembered that it condenses under pressure much more rapidly than when a true gas, such as is generally considered in engineering formulas.

According to the Bureau of Mines pamphlet on the Compressability of Natural Gas, No. 131, there is a variation of 10¾ per cent at 400 pounds and 28 per cent at 1,000 pounds. This will have an important bearing upon the uses of high pressure gas, although it is not the only factor by a good deal.

In order to appreciate pipe line capacities using Oliphant's formula for a true gas we obtained the following calculations for the different diameters in lengths of 100 miles.

16-inch inside diameter— 21,000,000 cubic feet per day—weight 54 pounds per foot.

20-inch outside diameter— 75,000,000 cubic feet per day—weight 85 pounds per foot.

22-inch outside diameter—100,000,000 cubic feet per day—weight 105 pounds per foot.

As 16-inch seamless is as large as a purchaser can be sure to get quotations on, at present, we will compare the capacity of the 16-inch pipe at 400 pounds pressure and 1,000 pounds pressure.

Size pipe 16-inch inside diameter value of a = 1,160.

Capacity for moderate pressure approximately 21,000,000 cubic feet per day—weight pipe 54 pounds per foot.

Capacity for high pressure approximately 100,000,000 cubic feet per day

(Continued on Page 102)

COLUMBIAN CARBON CO. GAS BUSINESS GROWS

Columbian Carbon Co. is a consolidation of 13 companies engaged in allied lines, and was incorporated in 1921 in Delaware to succeed a West Virginia corporation of the same name. Columbian Carbon is the largest manufacturer of carbon black in the world, producing about 35 per cent of the world output. The balance of the commodity is produced by about 25 competitors. In addition to the main commodity, which for a time was the sole product, Columbian output includes natural gasoline, bone black, lamp black and natural gas. The products are used in the manufacture of rubber tires, pigments, polish, ink, phonograph records and a number of other items. The gasoline consumption is sold to refiners for mixing with low-grade distillates in making commercial gasoline. The main product, carbon black, is obtained by burning the residue natural gas after extraction of natural gasoline. In addition to the gas produced for its own use the company sells at wholesale natural gas to other companies and to local distributors.

Properties of the company are located in the states of Texas, Louisiana, Pennsylvania, West Virginia and Kentucky. Proven acreage leased or owned amounts to about 113,000 acres, with 268 wells having an open flow of practically 1,200,000,000 feet a day. Plant and equipment is comprised of 15 carbon black factories, several natural gasoline plants, 1,300 burner buildings, 128 warehouses, 137 buildings, a fleet of tank cars, machinery and an extensive pipe and gathering system.

Production of the several products for recent years follows:

	Carbon Black (pounds)	Lamp Black and Pigments (pounds)	Natural Gasoline (gallons)	Natural Gas Production (cubic feet)	Natural Gas Sales (cubic feet)
1922	31,512,619	4,462,141	4,720,594	20,358,011,000	2,175,315,000
1923	62,490,513	7,018,928	12,405,571	36,880,248,000	3,298,386,000
1924	73,536,145	5,218,867	15,173,059	49,980,883,000	6,083,310,000
1925	64,888,416	7,443,786	12,001,811	41,985,626,000	7,017,921,000
1926	60,687,107	4,188,136	10,374,461	40,218,879,000	12,406,650,000

The summary of production shows the growing importance of the natural gas business. The natural gas sales in dollars, and revenue per 1,000 cubic feet are set out in the following table:

Year Ended Dec. 31—	Sales	Per Cent Increase	Rev. per M Ft.
1922	$ 131,080		0.0602
1923	166,457	27	.0504
1924	715,607	32	.1176
1925	964,934	34	.1374
1926	1,596,199	65	.1286
1927	*2,600,000	63	.1300

*Estimated.

Contracts have been consummated that will eventually call for additional deliveries of about 50,000,000 feet of gas a day. One contract is with the Interstate Gas Co. for the delivery of 40,000,000 feet a day for a period of 10 years and another contract is with the Louisville Gas & Electric Co. for an ultimate 10,000,000 cubic feet a day. But a small portion of the Louisville order was supplied for most of this year, although this winter it is expected that close to the full contract provision will be delivered. Columbian Carbon owns one-fourth of the Interstate common shares. The company has still other reserves and some in prospect and is seeking additional markets for the surplus gas.

SEAGRAVES PRESIDENT OF HOUSTON GULF GAS

HOUSTON, Tex., Dec. 31.—Odie R. Seagraves, formerly vice president, has been elected president of the Houston Gulf Gas Co., succeeding W. L. Moody, Jr., of Galveston.

W. L. Moody, Jr., and Frank B. Stoltz of New York were elected vice presidents; J. A. McKenna of New York, secretary; R. H. Hawn and Warren J. Dale, both of Houston, assistant secretaries, and N. N. Oille of Houston, treasurer. Mr. Stoltz, recently elected vice president, is president of the Houston Gas & Fuel Co.

In the early part of 1928 the Laredo gas fields will be connected with the Refugio line, Manager Hardie announced. This will give Houston a potential supply of 150,000,000 cubic feet of gas daily, he said.

The Dixie Gulf Gas Co., a subsidiary, will be bringing 10,000,000 cubic feet of gas daily to the Houston Gulf Gas Co. from the fields of northern Louisiana by January 1, Mr. Hardie said.

The Empire Power Co., holding concern, is planning a program of expansion for 1928, according to Mr. Hardie. Negotiations are under way for the purchase of the gas distributing company at San Antonio. The Empire Power Co. already has an option to buy this property and expects to close the deal by January 1.

This concern is supplying San Marcos with natural gas and has a franchise to serve Austin.

DEXTER HELIUM PLANT WILL BE INSPECTED

WICHITA, Kans., Dec. 31. — Representatives of English bankers are expected in Wichita soon for an investigation of the helium project at Dexter. The leases, drilled by Forrester & Cook, were financed through an English syndicate:

The helium field at Dexter is one of the four so far discovered in this country. The first unit of a plant erected there by a Louisville corporation is processing helium at capacity of the plant. The output, contracted to the United States navy, is shipped in steel containers daily. One-tenth goes to General Motors Corp. for experiments.

It is thought the helium acreage at Dexter is the greatest in the United States. The Government spent nearly $6,000,000 on a plant near Fort Worth and now reports the field about exhausted. A government plant is announced for the Amarillo gas field.

GALVESTON GAS TRANSFER

GALVESTON, Tex., Dec. 31.—Transfer of the franchises granted to Emil G. Lege, an official of the Galveston Gas Co., last summer has been made to the Galveston Gas Corp., which supersedes the company, and to the Galveston Pipe Line Co. Work on the pipe line to bring natural gas into Galveston is now in progress.

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A. O. SMITH CORPORATION

Oil & Gas Field Products Division

General Offices—Milwaukee, Wis.

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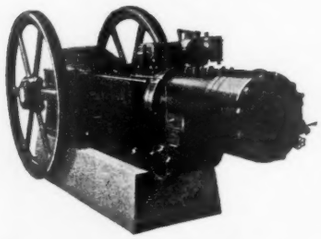
EQUIPMENT AND SUPPLIES

REID COMPANY ENGINE EMBODIES GOOD POINTS

The Joseph Reid Gas Engine Co., Oil City, Pa., has added another new gas engine to its line of oil field machinery. This latest product, the Type C, is an enclosed-type, two-cycle gas engine built to exclude any dust or sand which might be in the air where the engine is installed. It is made in two sizes, 40 and 45 horsepower, and with the exception of the complete cylinder, including piston and combustion head, the two sizes are identical and the parts are interchangeable. If desired, the 40 horsepower cylinder can be used on the 45 horsepower engine and the 45 horsepower cylinder on the 40 horsepower engine.

The main features of this Type C engine are: Enclosed bed plate, splash lubrication for the crank shaft, connecting rod,



cross head and cross head pin bearings; bored cross head guide; replaceable, steel-backed, babbitt-lined main bearings; new governor of Reid design, enclosed and running in a bath of oil, and new intake valve located on the top of the cylinder.

The governor, Wico igniter and cam, force feed oiler eccentric, and the governor oil circulating pump have been mounted as a unit in one case. The lay shaft has been made in two pieces coupled together with a flange coupling so this assembly can be removed in its entirety without disturbing the adjustment of the driving gears.

The lay shaft is driven by helical gears from the crankshaft and is supported by bronze-bushed bearings, entirely enclosed and running in oil. Mounted on the lay shaft are the cam for operating the Wico magneto, an eccentric for operating the governor oil pump and force-feed oiler, the governor driving gear, and on the outer end a cam for operating the automatic air starter valve.

The governor is a new Reid design. It is mounted in one case, the bottom of which is used as an oil reservoir for a small plunger pump that cascades oil over the moving parts and constantly lubricates the mechanism. No complicated levers are necessary, as the governor is placed directly beneath the fuel valve.

The speed adjusting arrangement is simple and allows the governor to be set for any desired speed while the engine is running.

FILTER TAKES FOREIGN MATTER FROM GASOLINE

The Butler filter removes foreign matter from gasoline, including water, scale, sand, etc. It is made by the Butler Manufacturing Co., Kansas City, Mo., and Minneapolis, Minn.

It is scientifically constructed on a simple principle and its operation is simple and easy. There are no parts to get out of order. Its use is recommended at all storage plants by the manufacturers who say it can be profitably employed wherever gasoline is kept in quantity.

The Butler filter is 78 inches high over all; the diameter is 24 inches. It has welded construction throughout.

KLINGER WITH AMERICAN CABLE

George Klinger, for the past 20 years, identified with the Wickwire Spencer Steel Corp., has joined the sales forces of the American Cable Co., in the capacity of eastern oil field wire rope representative and research engineer. Mr. Klinger took up his new duties on January 1, operating out of the American Cable headquarters at 105 Hudson Street, New York. For years, Mr. Klinger has been an active member of the American Petroleum Institute.

LUBRICATED VALVE IS IN WORLD-WIDE DEMAND

That lubricated valves are attracting the attention of engineers throughout the world operating gas, petroleum and chemical plants, is indicated by recent large shipments.

One of the largest single shipments of lubricated valves has just been made to a nitrate corporation in Tocopilla, Chile, the order consisting of several hundred valves of various sizes, for use in handling acids. This shipment was made by Merco Nordstrom Valve Co. of San Francisco. Other large shipments have been made by the same company in the past 30 days to oil companies with plants in Eagloil, N. J.; Houston and Dallas, Tex.; Casper, Wyo.; Lockport, Ill., and Whiting, Ind. One gas company in Detroit has just placed an order for several hundred Nordstrom valves.

A leading chemical company is installing lubricated valves in its plant in Bartlett, Calif., according to the manufacturers. The new plant of Merco Nordstrom Valve Co. in Oakland is now in full operation, states H. S. Shuey, secretary.

BUSINESS NOTES

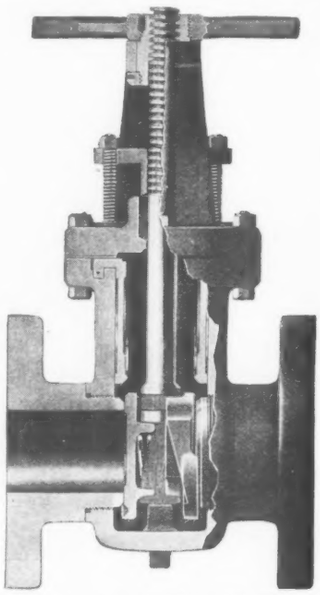
The Prescott Co., Menominee, Mich., has closed contracts with the Magnolia Pipe Line Co. for the installation of four 25,000-bbl. main line pumps.

Jule C. Axelson, president and general manager of the Axelson Machine Co., Los Angeles, is spending two weeks at the St. Louis plant, conferring with Delbert F. Axelson, assistant manager and plant manager, regarding improvements being made at the plant. Clyde Ellwood, general sales manager, is back in Los Angeles after visiting oil fields in the East and Mid-Continent.

NEW GATE VALVE HAS IMPORTANT FEATURES

A gate valve embodying 18 revolutionary principles of design has been patented and placed on the market by the Kelly Co., Chicago, under the name of the Kelly Neway Gate Valve.

The new valve, designed by P. J. Kelly, has self-cleaning seats, positive valve disc protection when open, elimination of pockets, use of replaceable inserts and seats and adaptability of a standard body design to any type of service by the



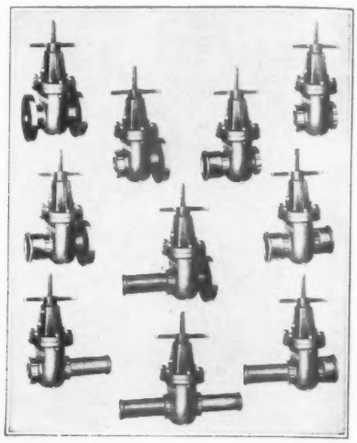
Cut-away view of valve with flanged inserts.

use of the proper insert—screw, flange, hub or spigot.

Probably the most important of these improvements is the self-cleaning feature. Each time the Kelly valve is operated a reciprocal scraping of moving parts removes all scale. This, combined with the elimination of pockets, keeps the valve clean at all times, prevents the gradual misalignment of parts, and helps to insure maximum operating efficiency.

Seat rings (and consequent interior leakage because of differing coefficients of expansion) are eliminated by the use of instantly removable and replaceable inserts with which the seats are integral.

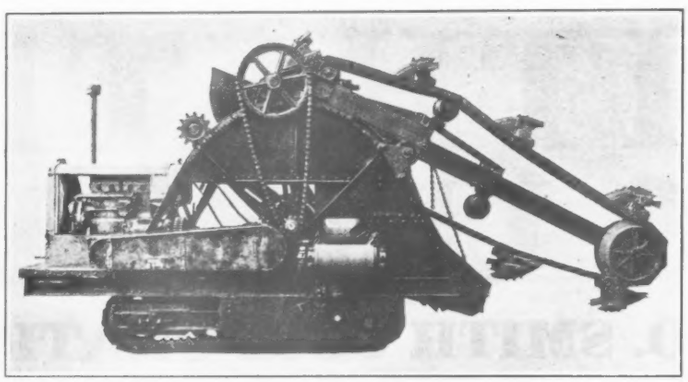
Another novel feature is the adaptability of one standard body feature to any desired type of service by the use of



Ten service combinations with standard body and interchangeable inserts of screw, flange, hub and spigot types.

the proper insert—screw, flange, hub or spigot. Thus the 10 different service combinations shown are possible with one standard body.

AUSTIN CORP. HAS SMALL TRENCH MACHINE



Austin Machinery Corp., Muskegon, Mich., announces the completion of a small type trench machine for digging shallow sewers and laterals, gas, water, and pipe line work, as well as electric conduit trenches. This machine, Model 100, is offered as the result of Austin accumulated experience in the design and manufacture of larger trench-excavating units. The first showing will be at the Good Roads Show in Cleveland, January 9 to 13, inclusive. The machine is now in production and available to contractors.

WORK ON DOHENY-STONE DRILL PLANT IS BEGUN

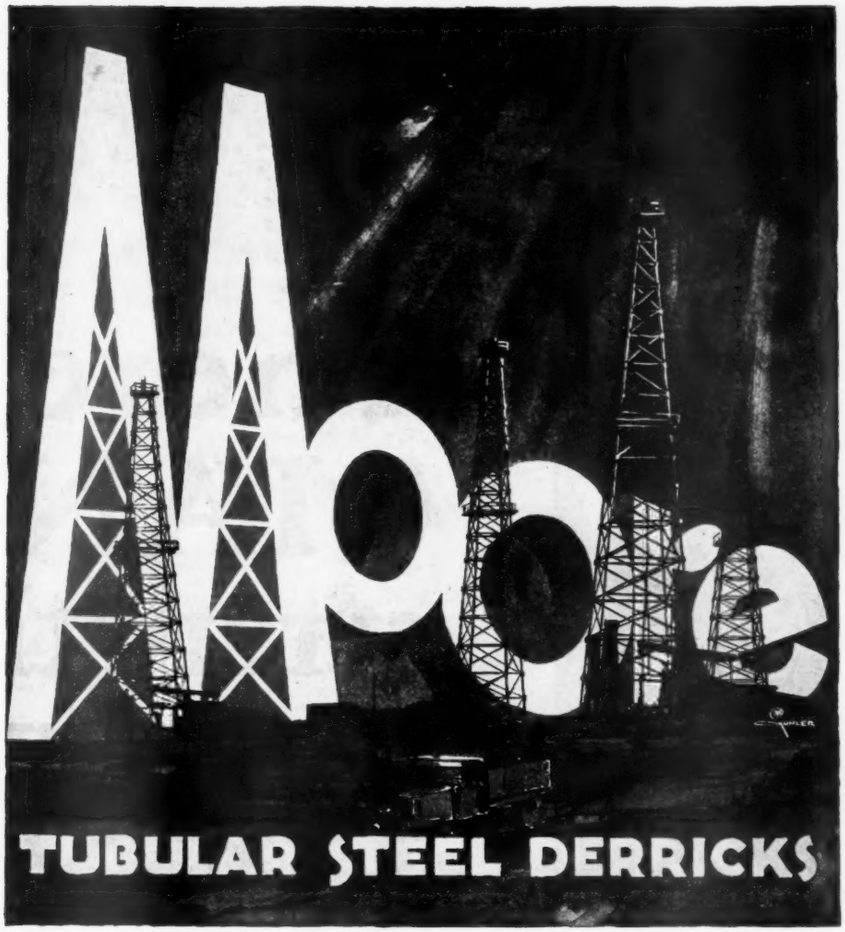
Announcement is made of the starting of work on a large modern plant for the Doheny-Stone Drill Corp., 413 Petroleum Securities Building, Los Angeles. The plant is located on a 40-acre site near Torrance, Calif., and plans for future additions call for the use of this entire area. The architecural and engineering plans for the plant have been prepared by Hamm, Grant & Bruner, Inc.

The first unit of the main building will be a one-story, saw-toothed roofed structure, 180 by 360 feet, with heavy structural steel frame and corrugated iron walls and roof. An outdoor craneway of 60-foot span will parallel the building on the east, and 10-ton Shepard transfer cranes will serve this space as well as the three 60-foot interior bays.

The floors and outdoor paving will be of reinforced concrete, treated with a floor hardener. Steel sash with mechanical operators and wire glass will be installed in the walls and saw teeth. Scales will be provided at receiving and shipping points, and a large truck scale at the entrance to the plant.

This main building is designed to be enlarged to 300 by 420 feet, and the plant is laid out to permit the addition of three more units of this size, in addition to a foundry and forge shop. Other structures to be erected at this time include and office building, change building, garage, lumber storage, heat treating and cleaning building, blacksmith shop, pattern and carpenter shop, and pattern storage.

The cost of the plant to be built at this time will be approximately $300,000, exclusive of site and machinery. It is expected to have the erection of the buildings completed in February, 1928. It will be used for the manufacture of the Doheny-Stone hydraulic feed rotary drilling equipment.



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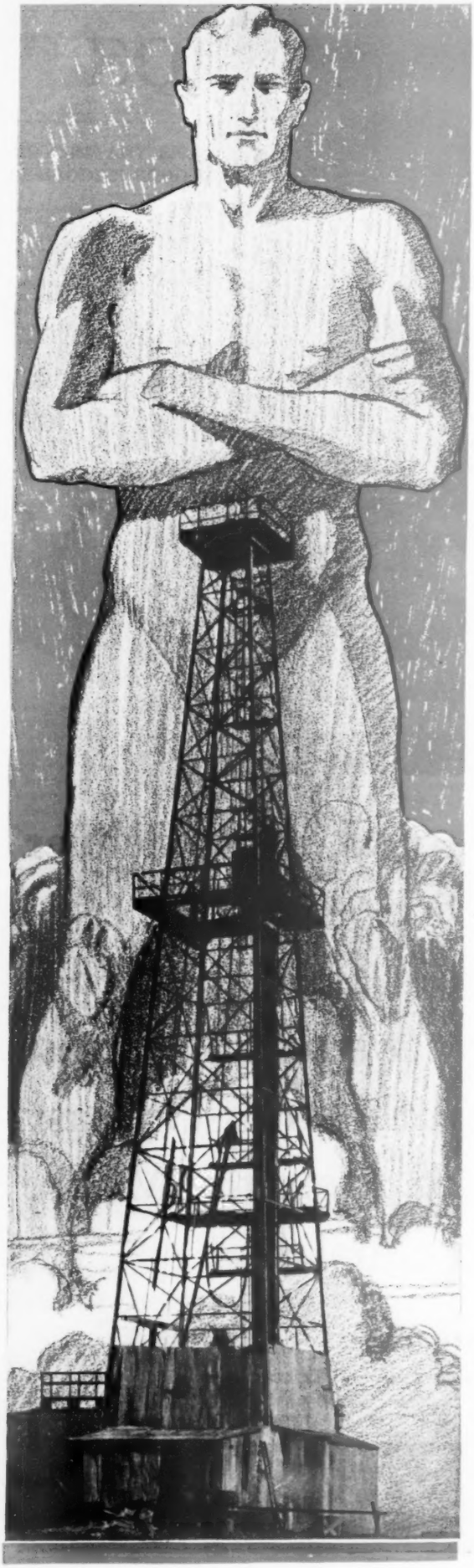

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Behind this steel fabrication is an Engineering Service specializing in Oil Country practice. And down to the smallest detail of design and fabrication, including galvanizing, IDECO Derricks, wheels, crown blocks and other rig equipment are built in our own shops. Into our products so completely under their supervision these engineers have planted a strength far in excess of the requirements of ordinary operation. This Giant's strength is for the unforeseen emergencies.

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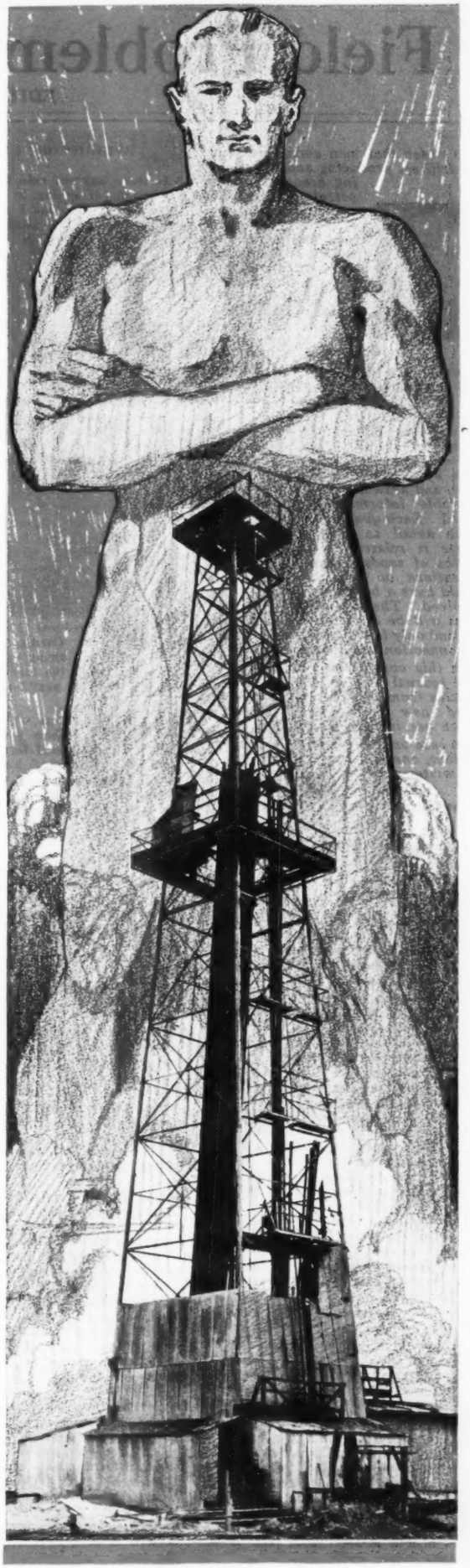


Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

MORE ABOUT STRAIGHT HOLES

Disagreement has been expressed with a statement on this page November 24, 1927, that "information obtainable seems to indicate that there is little to choose between the differential drive and the ordinary rotary equipment in point of straightness of the holes made by them." Letters of dissent have come from several quarters. One of these says:

"In drilling with either cable tools or the regular hand-fed rotary it is common practice for the driller to feed several inches at a time, depending, of course, on the nature of the formation, and then he waits for the drill to cut away material until the lines are tight again, at which point he again lets out rope by medium of the temper screw on a cable tool outfit or by raising the brake and feeding out casing line on a rotary. He ordinarily does not begin to feed until the lines are tight, in other words, until drilling progress has been impeded, and when he does let out or feed he releases too much, so that the lines are somewhat too loose. There is, however, a point between these two extremes, a happy medium so to speak, at which the drill functions most efficiently, but only at that point or when the proper tension is maintained on the cable or casing line."

The writer of the letter adds that the differential drive automatically accomplishes this end, with the result that a much closer proximation to perfect feeding of the drill is attained.

Other writers make the same point, which is believed to be a sound one. In the light of fuller information received since the publication on this page already referred to, it is desired to say that evidence in hand points clearly to the correctness of the contention that the differential drive is much more likely to drill a straight hole than is the ordinary rotary outfit.

WEIGHT OF CASING

Is there any set rule to follow as to the weight of casing in wells for any given depth? By that I mean, what determines the weight casing to use for different depths?—J. H. S.

The weight of casing to use in a well is dependent upon factors which may be summarized as follows: Depth of well, length of casing string, type of formations penetrated, method of drilling, casing program, and type of casing. Each of the above factors must be taken into account in determining the proper weight of casing to use.

Under depth of the well, the protection offered by other strings of casing in the hole makes it possible to run a combination string of two different weights of casing. The depth of the well naturally determines the length of the various sizes of casing.

Length of casing string required has a direct bearing on the weight of casing to use. With increasing length, the effects of hydrostatic and formation pressures become more pronounced, also the possibility of casing pulling apart under its own weight is increased. The present practice of "floating" the casing string into the hole reduces the hazard of the casing parting. Casing may also part when pulled up, owing to the friction of the pipe against the formation walls below the string of next larger size of casing in the well.

Certain formations will stand without caving whereas others cave very readily. Loose, unconsolidated formations have a tendency to "squeeze," hence impose a lateral pressure against the casing. To reduce the possibility of casing collapse, heavy casing is desirable. When formations do not stand up well, a greater number of casing strings are required as it is impossible to drill for any great distance ahead of the shoe of the last string of casing in the well. When it is possible to drill several hundred feet of hole without running in a string of casing, running in and out of the same string, also on account of the wear on the casing caused by the rotating drill pipe, many strings of casing are worn through and fishing jobs often result. The greatest wear usually takes place at the casing shoe and on the two or three bottom joints. By using heavy casing on the bottom three joints or by inserting the three bottom joints in a slightly larger size and spotwelding the two together, casing trouble may be minimized. Of course in crooked holes, wear such as just described may occur at other points in the casing.

The method of drilling also has a bearing on the weight and kind of casing to use. In cable tool trilling certain of the casing strings carried while drilling is going on are pulled and used in other wells. It may be to advantage to use a heavy casing on account of the longer life. Cable tool drilling is now largely confined to localities where formations are hard and stand up well. In rotary drilling casing is seldom ever pulled except in fishing jobs or when the well is being abandoned, and in the latter case it is usually impossible to pull the entire string, that portion set in open hole remaining in the well.

Differences in subsurface conditions as between localities, between fields, and between areas on the same structure necessitate variations in the casing program. For example, in one locality the casing program may call for 15½-inch, 10-inch, 8¼-inch, 6¼-inch and 4½-inch strings, whereas in another, 12½-inch, 8¼-inch and 6½ or 6⅝-inch string will be sufficient assuming that the depths of well in both localities are practically the same.

That portion exposed to the formation only is subject to the entire formation pressure, hence when a greater number of strings are used, a shorter length of each size of casing is exposed to the formation. Cementing operations in connection with the setting of casing also have a bearing on the weight of casing to use. A column of cement back of the casing aids in supporting and protecting the casing.

It is well known that seamless casing is stronger than lap weld. The collapsing strength of seamless casing may be determined by adding 20 per cent to the collapsing strength of the same size of lapweld casing. Hence when a greater collapsing strength is required rather than a greater wall thickness, it may be used to advantage.

Thus it may be seen that it is impossible to set forth any fixed rule as regards the weight of casing to use at different depths.

ELECTRICAL DEHYDRATION

Can you give us any information as to current tension and the current consumption in electrical dehydrators for dealing with crude oil emulsions and with what degree of success they are used?—C. E. M.

A discussion of the different types of electrical dehydrators as to construction, power requirements, and types of oils treated, is given in United States Bureau of Mines Bulletin No. 250, 1926, by D. B. Dow. Copies may be obtained by writing to the Superintendent of Documents, Washington, D. C. The price of this publication is 25 cents. This bulletin says that in the Cottrell system of dehydrating cut oil, an alternating current of 11,000 volts is used. In the Seibert process a direct current with a potential of approximately 500 volts is used. In the Cottrell system, electric power consumption is ordinarily less than one-tenth kilowatt-hour per barrel of recovered oil and often as low as 25 watt-hours per barrel. The consumption requirements per barrel are dependent upon the percentage and type of emulsion treated.

Electrical dehydrators have been used with satisfactory results in California and on the Gulf Coast, but their success in the Mid-Continent has not been so marked. The bulletin referred to answere your questions in much greater detail than would be possible on this page.

OVERCOMING CRYSTALLIZATION

It is necessary to change 20 per cent of the drilling string every 30 days on account of crystallization in drilling a deep well in this part of the Mid-Continent Field. Is there any way of overcoming this trouble?—K. R. B.

Without more specific information as regards the depth of well, size of hole being drilled, size of drill pipe, also whether there is any junk in the hole, it is impossible to recommend any remedy. The crystallization may be due to any one of a number of causes. For example, drilling in a very crooked hole increases the torque or twisting force on the drill pipe and this may be great enough to cause crystallization. You state in your inquiry that the well is a deep one. Hence small diameter drill pipe probably is being used. Even when drilling in a reasonably straight hole it is possible to have excessive torque when the bit is being crowded in an attempt to make more hole than is justifiable. Your difficulty may be overcome by feeding in the drill more slowly. In the event that you care to send in additional information along the lines suggested, it is possible that your question can be answered more in detail.

OPERATING GAS WELL WATER SIPHON

What is the usual construction of a gas well water siphon? How is it operated? —C. H. E.

It is assumed that you refer to the siphon used to remove water coming into a gas well. Such a siphon consists of the well head connection for packing off between the siphon line and the casing or tubing if there is tubing in the well; the siphon line, usually 1-inch pipe, although three-quarters inch, 1¼-inch or 1½ inch diameter pipe may be used, the size being dependent on the volume of water to be removed; an anchor at the bottom of the siphon line; water inlets in the siphon line placed above the anchor and consisting of two tees or screened or slotted pipe; jets, usually one-eighth inch diameter and drilled in a short nipple that is placed in the siphon line with the nipple located about 10 feet above the water level in the well.

In order to determine beforehand whether the siphon will operate, locate the top of the water in the well. Shut in the well and obtain the shut-in pressure. Oil and gas sand waters weigh approximately 0.44 pound per foot. Divide the shut-in pressure by 0.44 and this will give you the height to which the water will rise in the siphon line above the jet or jets, usually termed the submergence. If the submergence is equal to or more than one-seventh of the lift, that is, from the top of the water in the siphon line to the top of the well, the siphon should operate. If it is not, then it will be necessary either to build up the pressure between the siphon line and the casing or tubing from some outside source,. or, as often as possible, to lower the water level by swabbing or bailing, and thus to build up the well pressure.

LUBRICATING WIRE LINES

Is there any objection to using crude oil as a lubricant on wire lines? I have been using it for years without any particular bad results that I can see, but I am told that it shortens the life of the lines.—B. L. K.

If the oil is corrosive then it is bad policy to use it for lubricating purposes. Incidentally, it would seem a rather wasteful procedure, as only a fraction of the oil has lubricating qualities, hence in order to obtain the same amount of lubrication that could be obtained from a lubricating oil or grease, a greater quantity of crude oil would be required.

BRACING THE SAMPSON POST

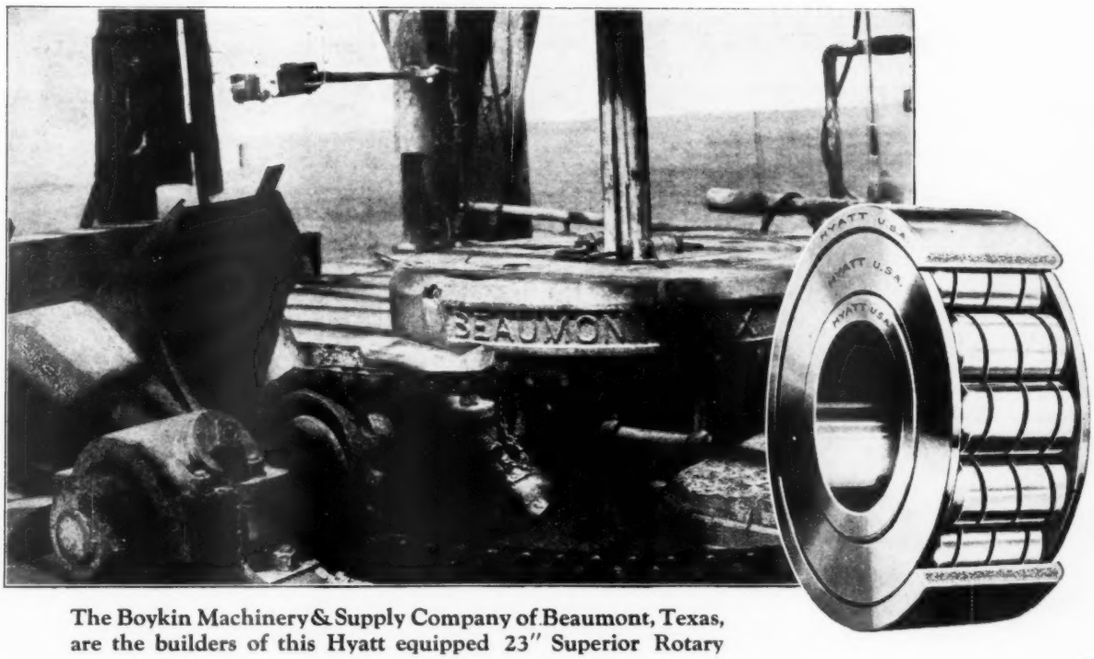
We have had some discussions as to the bracing of the sampson post on a pumping well. Should either side be braced more than the other?—Z. A. S.

Assuming that the load is properly balanced, the bracing front and back should be the same. This is a problem and may be solved by resolving the forces acting against the sampson post with the walking beam at the beginning of the stroke and at the finish of the stroke.

REASON FOR LEFT LAY LINES

In temporary pumping arrangements when wire lines are used, left lay lines are always demanded. Why is this?—J. E. D.

In left lay lines the twist is always to the right or clockwise, hence the twist of the lines prevents any unscrewing of joints.



The Boykin Machinery & Supply Company of Beaumont, Texas, are the builders of this Hyatt equipped 23″ Superior Rotary

Boykin Knows the Advantages of Using Better Bearings

Like most builders of better oil field equipment, the Boykin Machinery & Supply Co., Beaumont, Texas, employs Hyatt Roller Bearings to give the producer years and years of flawless bearing performance.

The sturdy Hyatts are practically frictionless and wearproof. They guard permanently against bearing breakdowns and costly production delays. They require no attention except an occasional lubrication. With Hyatts the mechanical parts last longer and function easier.

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Why not include Hyatt economies in all *your* oil field equipment?

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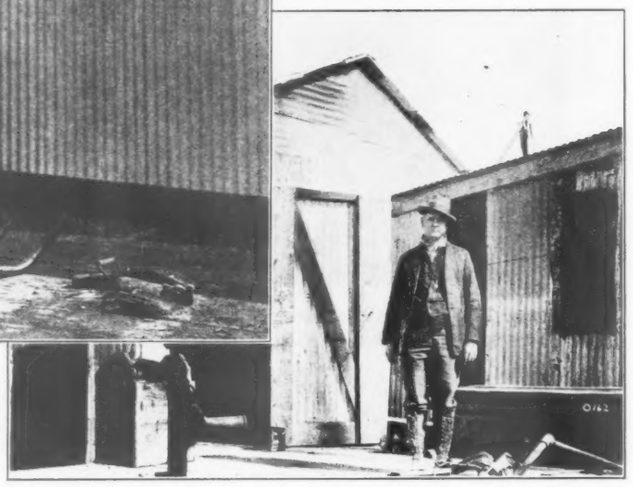
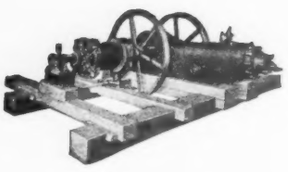
PRODUCT OF GENERAL MOTORS

"When we buy more engines—



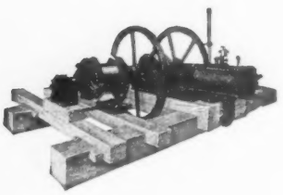
R. D. King, Driller, and J. D. Coombs, Tool Dresser of Gibson Brothers' crew around the Dixie Oil Company's lease at McCamey, Texas. At the right we see Mr. H. H. Gibson, himself.

FRANKLIN OIL DRILLING ENGINE



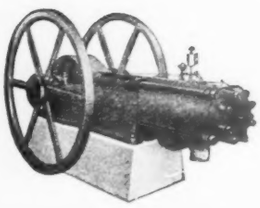
The Franklin is a single-cylinder, three-port, two-cycle VALVELESS engine. This is Type AO for Mid-Continent or Western Cable Tool Drilling. Price $3700.00. For Eastern Service $2600.00 and $3350.00. Prices F.O.B. Factory. Complete with self-oiling, reversible drilling clutch, circulating pump and fuel tank.

FRANKLIN GAS DRILLING ENGINE



Where gas is available this engine—just as efficient and economical—has an added advantage—*Interchangeability*. The prices for Western Service are $1725.00 and $2150.00. For Eastern Service $1450.00 and $1725.00. Prices F.O.B. Factory. These engines can show you a power, speed and flexibility almost unbelievable.

FRANKLIN GAS PUMPING ENGINE



Similar in construction to the drilling engine and interchangeable on the same block with it. You can either leave your Drilling Engine on the job for pumping or replace it with one of these lesser horse power Franklins without changing a single bolt.

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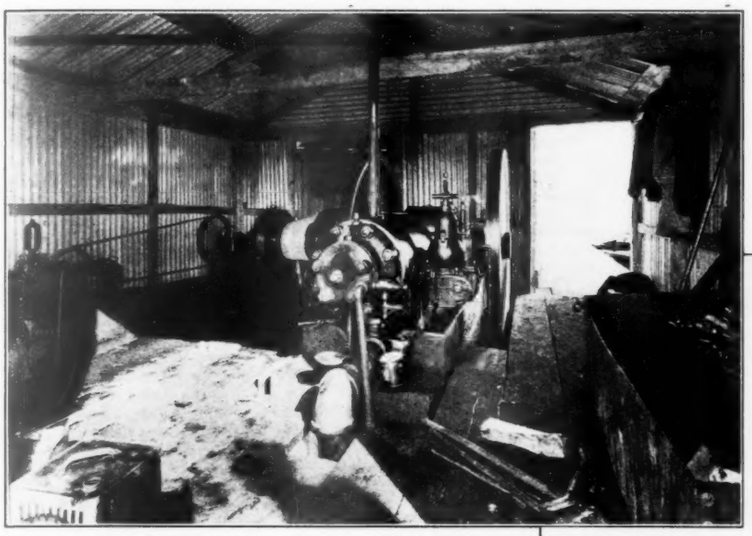
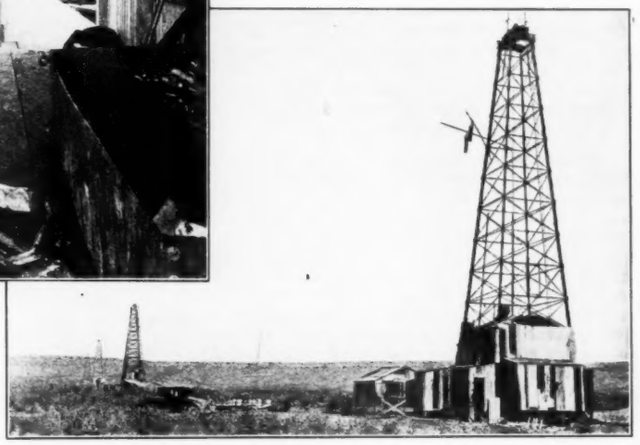


No coal or water to haul, no fires to tend, no boilers to leak on this Franklin Valveless installation. The four rigs at the right are all equipped with Franklins.



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"The most satisfactory power-plants we have ever worked with" is what the Gibsons think of Franklin Valveless; and that seems to be the consensus of opinion of all contractors who have standardized on these fast, dependable drillers and pumpers. While Franklin Valveless Engines are noted for economy of fuel, water and oil, don't overlook the advantages of easy transportation (one truck does it) and the fact that repairs are practically unknown.

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PRATT & WHITNEY

MEXICAN PRODUCTION DECREASE MORE THAN 24,000,000 BARRELS

MEXICO CITY, Mexico, Dec. 31.—During the period from January 1, 1927 to December 10, 1927, inclusive, according to the Trens Agency of Mexico City, 775 permits for drilling oil wells were granted by the Department of Industry, Commerce and Labor, according to official Mexican figures. Of this number, 83 were granted in January, 63 in February, 89 in March, 50 in April, 94 in May, 54 in June, 74 in July, 77 in August, 66 in September, 58 in October, 42 in November and 26 in the first 10 days of December.

Some of the permits granted during the year were of great importance because the work which has been carried out, is being carried out or which is in project is in new fields which have not yet been explored. Some of the wells which have been or are to be drilled are in the southern district of Tamaulipas, in Cacalilao and various of the Panuco fields, in Chiconcilla, the Tuxpan zone, Tecuanapa, the Isthmus of Tehuantepec and the Belen district of Tabasco.

The drilling during November and December, according to the department, went on without any unusual incident and progress was normal. Work was going on in the north of Coahuila and Tamaulipas, both new districts; in Altamira, Corcovado, Salinas, Ochoa, Cacalilao, Caracol, Topila and other fields of the Panuco and Tamesi River basins; in Quebracha to the southeast of Topila; at San Jeronimo in the vicinity of the Tamiahua Lagoon; at Chiconcillo, Amatlan, Zacamixtle, Alazan, Jardin and Paso Real in the Tuxpan region; at La Aguada, southeast of Ozuluama; at Mecatepec on the bank of the Cazones River in the State of Vera Cruz and in the more important fields of the Isthmus of Tehuantepec.

Between November 11 and December 10 of this year, seven productive wells were brought in with a joint daily capacity of 918 bbls. This gives a total of productive wells for the year of 198 with a total daily capacity of 382,865 bbls.

The exploitation in previous months, according to the department, has continued to be restricted in accord with the policy adopted by several of the companies. For this reason neither the exploration nor the exploitation has reached the normal level which the department considers the importance of the Mexican fields warrants.

In view of this fact, the Mexican production is not expected to be in excess of 64,000,000 bbls., this being a decrease of 24,400,000 bbls. over the 1926 production.

The production in October was slightly greater than that of the previous month, amounting to 4,932,096 bbls. with a commercial value of $12,255,335 Mexican pesos. Of this production 2,653,757 bbl's. were heavy crude, coming from 608 wells and 2,278,339 were light crude coming from 270 wells.

So far this year, including October, the Mexican production has been 54,471,125 bbls., with a total commercial value of $133,502,104 Mexican pesos. The total production since 1901 to include October of this year, is 1,455,398,422 bbls. with a total commercial value of $2,603,426,684 Mexican pesos.

In view of existing conditions and calculating exports to include November of this year, it is estimated that these will total 48,700,000 bbls. of strictly Mexican products and about 5,000,000 bbls. of products from crude brought to Mexican refineries and re-exported.

These figures, like those on production, are inferior to those corresponding to 1926; since in that year, 80,722,073 bbls. were exported of strictly Mexican production and 652,745 bbls. of foreign products re-exported.

Quotations on Mexican petroleum products were unchanged as was the case in previous months. Heavy crude, f.o.b. Tampico, not including taxes, was $1.15 and light crude under the same conditions was $1.35 a barrel.

Gasoline has been retailing in Mexico City at prices varying from 11 to 16 centavos a liter and there is no tendency reported of a return to the former high price of 22 or 23 centavos a liter which obtained before competition was started between producers and importers.

Text of Amendment By President Calles To Mexican Oil Law

MEXICO CITY, Mexico, Dec. 31.—(By Trens Agency)—The full texto of the measure amending the Mexican petroleum law and the considerations which the executive had in sending it to Congress are as follows:

Whereas, the Supreme Court of Justice of the Nation, hearing the revision the suit in amparo (equivalent to a restraining injunction) 31,927, initiated before the District Court of Tuxpan, with residence in Villa Cuauctemoc, Vera Cruz, by the Mexican Petroleum Co. of California, against acts of the Department of Industry, Commerce and Labor and its Technical Petroleum Agency in Tampico, which were considered violatory of Articles 4, 16, 22 and 27 of the Constitution, consisting in the revokation of permits for drilling the oil wells "Mendez 27", "Chijol 63" and "Dicha 104" on tracts at Chapacao, on the grounds that they had not asked for the confirmation of their rights in the terms stipulated by the Reglamentary Law of Article 27 of the Constitution in the Petroleum Branch, of December 26, 1925; handed down an opinion on November 17, 1927, in effect confirming the finding of the inferior court which granted the amparo to the complainment.

Whereas, in the aforesaid opinion, the Supreme Court of Justice established certain points of anticonstitutionality relative to the said law and its application in this case.

Whereas, from the expository part of the finding of the Honorable Tribunal, there as a fundamental argument for the granting of the amparo, the opinion that the complainant company could not have asked for the confirmation of its pre-existing rights without the previous disappearance of the restriction contained in the final paragraph of Item 2 of Article 14 of the law of December 26, 1925, wherefore, also, there could not elapse in prejudice of it, the period of a year, to that end established in Article 15 of the law itself, in view of the impossibility that a confirmation be asked which detracted from what was in the patrimony of the Mexican Petroleum Co. of California and always in view of the fact that such a request would have implied a submission to the burden aforesaid.

Whereas, on the other hand, in the consideranda fourth and fifth of the sentence of the Supreme Court, the principle is recognized that the requirement of confirmation and, consequently the time limit for requesting it do not injure individual guarantees, since they are only procedure imposed by the legislator, in the use and exercise of the relative rights, for reasons of public order and precisely for the purpose of safeguarding these; aside from the fact that the essential object of the issuance of confirmatory concessions is to give to the state the regulation and the intervention which Article 27 of the Constitution recognizes it to have.

Whereas, even though the opinión of November 17, 1927 only considers the violation of individual guarantees with relation to rights of property, it must be understood that the declaration that the time limit established by Article 15, of the Reglamentary Law of Article 27 of the Constitution in the Petroleum

(Continued on Page 161)

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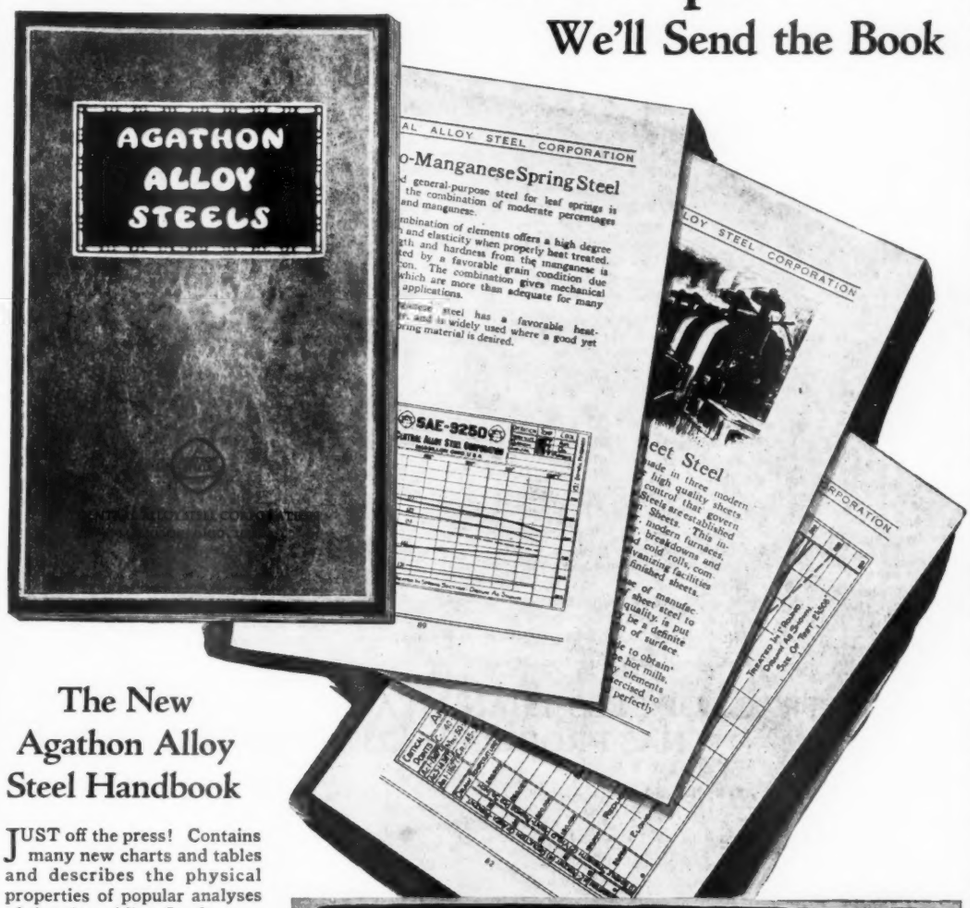

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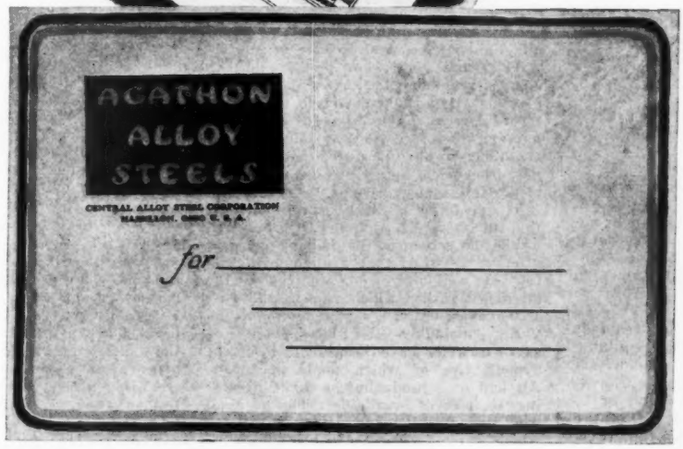

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St. Louis	Seattle	Cincinnati

Sulphur Content of Motor Fuels

Technical Committee Maintains That .10 Per Cent Should Be Retained as Maximum Permissible in Gasoline

By A. J. Kraemer[1], E. C. Lane[2] and C. S. Luce[3]

A great deal of interest has been manifested in the question of sulphur in fuels for automobile engines. Many different opinions have been expressed with respect to the effect of sulphur in gasoline on engine wear and engine performance. A wide difference of opinion exists as to the permissible limit of sulphur content for satisfactory operation.

One of the duties of the technical committee on lubricants and liquid fuels of the Federal Specifications Board is to recommend to the board, the maximum permissible content of sulphur for motor fuels for the use of government agencies. The technical committee has recommended, and the Federal Specifications Board has concurred in the recommendation, that 0.10 per cent of sulphur is a satisfactory limit, in view of all of the technologic and economic factors[4]. The contention has been made that a large quantity of gasoline containing more than 0.10 per cent of sulphur is being sold in the United States, and that this gasoline is being sold without complaints from users on the score of excessive sulphur. It has been maintained that the Federal Specifications Board should raise the limit for sulphur content of motor fuels, in order to relieve some refiners of the necessity of destroying a portion of their potential production of motor fuel, in the process of removing sulphur in excess of 0.10 per cent. The technical committee has maintained that no hardship would accrue to the Government by keeping the upper limit for sulphur at 0.10 per cent.

In keeping informed on the sulphur content of motor fuels sold throughout the United States, the Bureau of Mines has made analyses of the samples that were collected in making the semiannual gasoline survey during July, 1927. The results of the gravity and distillation tests of the survey were published as Serial No. 2827[5]. In the present report, results are reported of tests for color by the Saybolt chromometer, doctor test, corrosion test, and sulphur by the lamp method. These tests are described in detail in Technical Paper 323B[6]. The numbering of samples is the same in this report as in Serial No. 2827; for example, No. 25 of this report is the same sample as No. 25 of Serial No. 2827.

The detailed results of the examination of the motor fuels is given in Table 1, showing physical and chemical data for samples from different cities. In Table 2, the results for sulphur content are tabulated so as to show distribution of the samples, according to sulphur content.

Discussion of Results

Sulphur—The most striking feature of the results presented in this report is that they indicate that the motor fuels now being sold in the United States contain small proportions of sulphur. The United States Government specifications for motor fuels permit a content of 0.10 per cent sulphur, and there are only seven samples out of 130 (5.4 per cent) included in this report, that contained more than this quantity of sulphur. (No result was reported for sample No. 40, from Pittsburgh). Five samples, or 3.8 per cent, had exactly 0.10 per cent of sulphur. It is apparent from the gravity as given in Serial No. 2827[5] that half of the 12 samples that contained as much as 0.10 per cent of sulphur, were benzol blends. It is highly improbable that the seven samples that exceeded the specification limit for sulphur, represented as much as 5.4 per cent of the total volume of gasoline represented by the 130 samples for which results are given.

Doctor Test — Twenty-seven samples, or 20.6 per cent of the total number, were positive to the doctor test. Only three of the positive doctor test samples were among the 12 high-sulphur samples, indicating that the doctor test is not a criterion of sulphur content.

Corrosion Test—Only two samples are reported as showing discoloration, and both of these are among the high sulphur samples. The interpretation of the results of the corrosion test is dependent upon the judgment of the tester, and considerable difference of opinion is frequently encountered in the interpretation of the results of the test.

Conclusion—The most important conclusion to be drawn from the results presented in this report is that the sulphur content of more than 90 per cent of the gasoline represented by these samples, is less than 0.10 per cent. It is shown that the doctor test is of no importance, as a criterion either of sulphur content, or of tendency to corrode copper, but this has been realized by refiners for several years, and is merely confirmed by these results.

TABLE 2—Showing Distribution of Samples According to Sulphur Content

	Sulphur, Per Cent															
	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	.12	.13	.17	.21	.23	
New York		5			6						1					12
Washington		1	1	2	2	4		2	1	2	1	1				18
Pittsburgh		2	2	4		1	2	1	1	2						15
Chicago		1	6	6	1			1								18
New Orleans			1	2		1	1		1				1	1		11
St. Louis		3	1		3	1	1		1						2	26
Bartlesville		1	6	1	1											12
Denver	1	2	1		2											6
Laramie			1		1	2	2									6
S. Francisco					2		4	1	1	1						12
Total	1	21	22	18	24	12	10	4	6	5	1	2	1	1	2	130

Reports of Investigations, Bureau of Mines, Department of Commerce.

TABLE 1

Physical and Chemical Data for Samples of Motor Gasoline From Different Cities

(Motor Gasoline Survey, July, 1927)

Sample No.	Color Saybolt	Doctor Test	Corros'n Test	Sulphur per Cent
NEW YORK				
1	6	Negative	No	.05
2	+25	Positive	No	.02
3	21	Negative	No	.02
4	24	Positive	No	.05
5	11	Negative	No	.05
6	17	Negative	No	.05
7	24	Positive	No	.05
8	Colored	Negative	No	.02
9	21	Negative	No	.02
10	18	Negative	No	.05
11	22	Negative	No	.02
12	23	Negative	No	.13
WASHINGTON				
13	Colored	Negative	No	.06
14	22	Positive	No	.10
15	21	Negative	No	.06
16	21	Positive	No	.06
17	23	Positive	No	.09
18	25	Positive	No	.08
19	Colored	Negative	No	.04
20	19	Negative	No	.03
21	Colored	Negative	No	.02
22	18	Positive	No	.13
23	+25	Negative	No	.05
24	23	Positive	No	.03
25	24	Positive	No	.10
26	Colored	Negative	No	.05
27	21	Negative	No	.04
28	21	Negative	No	.12
29	Colored	Negative	No	.08
30	20	Negative	No	.06
PITTSBURGH				
31	Colored	Negative	No	.04
32	+25	Positive	No	.03
33	23	Positive	No	.04
34	21	Negative	No	.10
35	18	Negative	No	.03
36	Colored	Negative	No	.02
37	20	Negative	No	.07
38	12	Negative	No	.10
39	22	Negative	No	.06
40	Colored	Negative	No	...
41	22	Negative	No	.07
42	Colored	Negative	No	.09
43	+25	Negative	No	.04
44	Colored	Positive	No	.02
45	24	Negative	No	.08
46	+25	Positive	No	.04
CHICAGO				
47	+25	Negative	No	.04
48	23	Negative	No	.03
49	21	Negative	No	.02
50	23	Negative	No	.03
51	23	Negative	No	.04
52	19	Negative	No	.09
53	13	Negative	No	.04
54	25	Negative	No	.03
55	+25	Negative	No	.02
56	15	Negative	No	.05
57	24	Negative	No	.05
58	23	Negative	No	.03
59	+25	Negative	No	.02
60	21	Negative	No	.04
61	21	Positive	No	.04
62	19	Positive	No	.04
63	25	Positive	No	.02
64	25	Positive	No	.03
NEW ORLEANS				
65	22	Positive	No	.05
66	Colored	Negative	No	.05
67	21	Negative	No	.07
68	18	Negative	No	.05
69	Colored	Negative	No	.04
70	23	Negative	No	.09
71	23	Positive	No	.05
72	24	Negative	No	.21
73	25	Negative	No	.03
74	17	Negative	No	.17
ST. LOUIS				
75	17	Negative	No	.03
76	23	Positive	No	.09
77	22	Negative	No	.05
78	24	Negative	No	.03
79	18	Negative	Yes	.23
80	19	Negative	No	.06
81	16	Positive	No	.06
82	21	Negative	No	.02
83	+25	Negative	No	.03
84	22	Negative	Yes	.23
85	+25	Negative	No	.02
86	+25	Negative	No	.02
87	+25	Positive	No	.05
88	+25	Negative	No	.06
89	+25	Negative	No	.05
90	+25	Negative	No	.04
91	23	Positive	No	.03
92	21	Negative	No	.07
93	+25	Positive	No	.05
94	25	Negative	No	.05
95	25	Negative	No	.06
BARTLESVILLE				
96	+25	Negative	No	.02
97	+25	Positive	No	.02
98	Colored	Negative	No	.05
99	+25	Negative	No	.04
100	+25	Negative	No	.03
101	+25	Negative	No	.03
102	22	Negative	No	.03
103	25	Negative	No	.03
104	24	Negative	No	.03
105	+25	Negative	No	.02
106	22	Negative	No	.03
107	9	Negative	No	.02
DENVER				
108	21	Negative	No	.02
109	22	Positive	No	.05
110	23	Negative	No	.03
111	16	Negative	No	.05
112	22	Negative	No	.01
113	18	Negative	No	.02
LARAMIE				
114	13	Negative	No	.05
115	15	Negative	No	.06
116	15	Negative	No	.06
117	16	Negative	No	.07
118	15	Negative	No	.05
119	9	Negative	No	.03
SAN FRANCISCO				
120	+25	Negative	No	.05
121	+25	Negative	No	.04
122	+25	Negative	No	.07
123	25	Negative	No	.09
124	+25	Negative	No	.07
125	+25	Negative	No	.07
126	+25	Negative	No	.05
127	Colored	Negative	No	.10
128	+25	Negative	No	.04
129	19	Negative	No	.08
130	+25	Negative	No	.07
131	21	Negative	No	.04

"Colored" denotes that the gasoline as marketed is artificially colored.

TRACT OF LESS THAN AN ACRE HAS PRODUCED 4,235,115 BARRELS

HOUSTON, Tex., Jan. 2.—Completion of the Salt Dome Oil Co.'s No. 1 Cruse Valle arpent in the Evangeline (Jennings) Field of Acadia Parish, Louisiana, calls attention to a tract which has had one of the most colorful and spectacular records in the history of Texas and Louisiana coastal fields.

The arpent, a tract of land comprising eighty-five-one hundredths acre, is in the heart of the Evangeline Field. While no records are available as to the exact production, this tract of less than an acre is claimed to have produced more oil than any other lease for its size in the history of the oil industry.

This tract is of particular interest at this time as the Salt Dome Oil Co.'s well marks the return of the drill to the lease after years of virtual abandonment and the new well offers some contrast to the discovery gusher which came in flowing 18,000 bbls. daily.

Not including the latest addition, seven wells have been drilled on the arpent, five of which made producers. All had quit producing by 1920, according to records available. The original well was Wilkins and associates' No. 2 which came in on November 20, 1904, flowing 18,000 bbls. daily. In the period between that date and the following January 1, it produced 561,783 bbls. of oil. At that rate, in a year's time it would have yielded 5,007,800 bbls. This well holds the record of having been one of the most consistent big producers in history. It was abandoned in 1911.

The next well completed was Schultz & Ziegler's No. 2, of whose initial production there is no record. With this well and the discovery well the only two producers during 1905, a total of 1,961,373 bbls. were produced in that year. This second well was abandoned in 1912. A third well, Wilkins' No. 4, was drilled in 1905 but it never produced.

In 1906, Schultz drilled No. 2. There is no record of this well's initial production but it quit producing in 1909. The next well drilled was in 1909, being Harry Oil Co.'s No. 3, but it never produced. Gulf Refining Co. completed its No. 1 on the tract on May 4, 1912, flowing 400 bbls. daily from 81 feet of sand at a total depth of 1,714 feet, and on July 7, 1912, Ziegler and associates brought in another well flowing 125 bbls. from 80 feet of sand at a total depth of 1,790 feet. The former still was producing in 1919 but the latter quit producing January 2, 1914.

Up until 1920, this one small tract had produced a total of 4,235,115 bbls. of oil. No new producers have been drilled since 1912 but at present several operators have shown a tendency to move back to that district. Production in the Valle arpent is in a sand around 1,600 to 1,700 feet, the lastest well producing from 10 feet of sand at a total depth of 1,675 feet.

The Jennings Field, in the center of which is the Valle arpent, is approximately 6 miles northeast of the town of Jennings, and 50 miles inland from the Gulf of Mexico. It is on the outcrop of the Port Hudson (Pleistocene) formation and midway between the Bayou Nezpique and Bayou des Canes, the two bayous being 4 miles apart.

Of interest is the fact that the Valle arpent topography is between two "highs" and virtually in a syncline from surface indications.

[1]Associate petroleum chemist, Bureau of Mines, Department of Commerce.
[2]Assistant petroleum chemist, Bureau of Mines.
[3]Junior chemist, Bureau of Mines.
[4]Federal Specifications Board, Standard Specification No. 2d, United States Government master specification for lubricants and liquid fuels, and methods for sampling and testing. Technical Paper 323B, Bureau of Mines, obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents.
[5]Lane, E. C., Condit, D. J., and Luce, C. S. Sixteenth semiannual motor gasoline survey. Reports of Investigations, Serial No. 2827, Bureau of Mines, August, 1927.

NATIONAL CHAIN DRIVEN SAND REEL

TYPE "J"

DESCRIPTIVE BULLETIN No. – 18 N ON REQUEST

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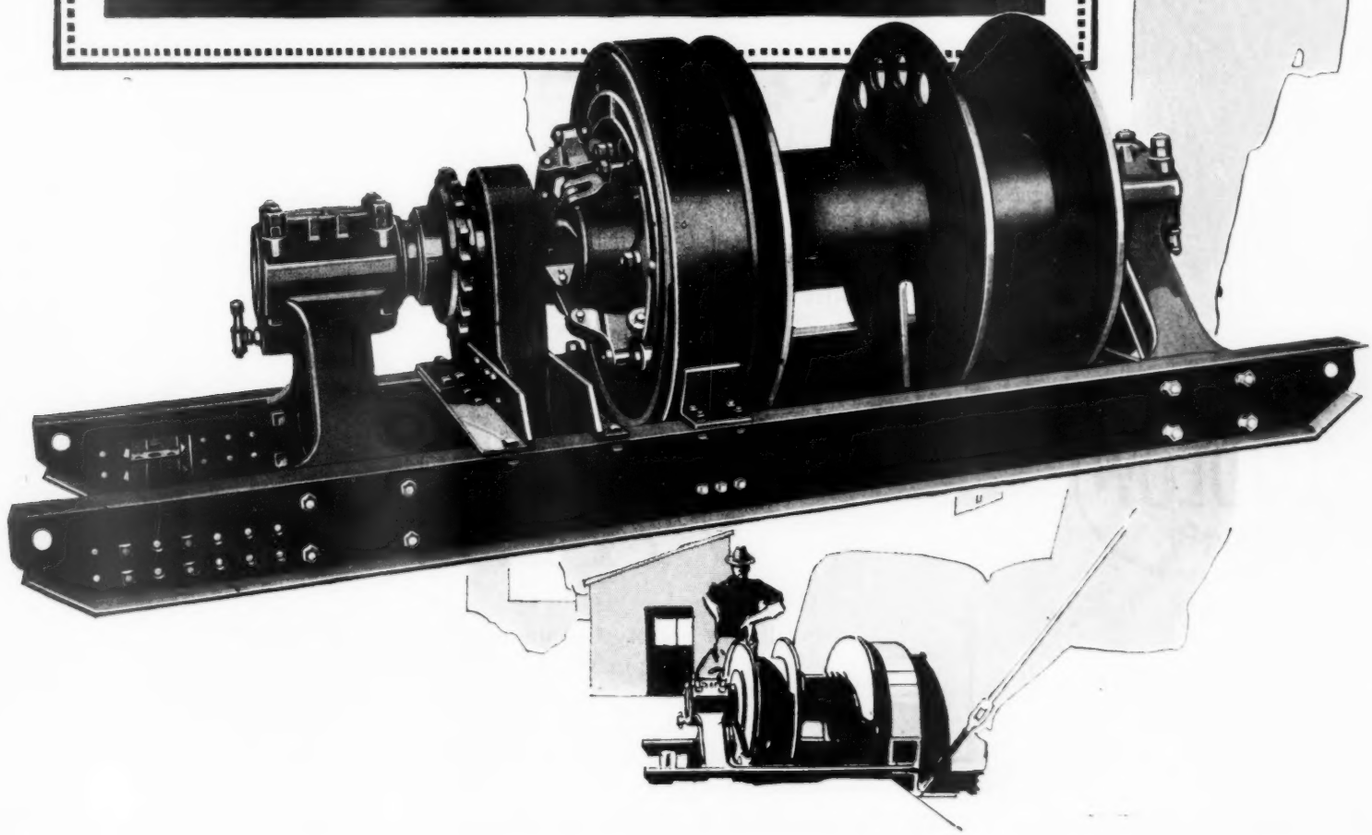

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INITIAL PRODUCTION OF DECEMBER'S WELLS

(Continued from Page 33)

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Carter	7	17	24
Creek	20	52	72
Garfield	6	16	16
Grady	10	27	37
Grant	6	15	15
Hughes	1	10	11
Kay	9	28	37
Logan	1	25	26
Muskogee and Wagoner	6	39	45
Okfuskee	9	28	37
Okmulgee	8	30	38
Osage	16	39	55
Pawnee	2	11	13
Payne and Lincoln	6	13	19
Pontotoc	7	48	55
Pottawatomie	10	43	53
Seminole	16	164	180
†Stephens and Cotton	11	749	2 4
Tulsa	6	12	18
Miscellaneous	11	66	77
Total December	153	716	869
Total November	129	770	899
Difference	24	54	30

KANSAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	4	140	2	0
Chautauqua and Elk	6	35	3	0
Cowley	5	50	4	0
Greenwood	15	1,830	4	0
Sumner	10	3,745	0	1
Miscellaneous	8		6	2
Total December	48	5,800	19	3
Total November	137	12,991	45	16
Difference	89	7,191	26	13

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Butler	5	17	22
Cowley	8	22	30
Elk	1	7	8
Greenwood	14	29	43
Marion	..	10	10
Sumner	10	31	41
Miscellaneous	12	68	80
Total December	50	184	234
Total November	53	174	227
Difference	3	10	7

MONTANA

Summary of Field Operations

Dist.—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Cat Creek	0	0	0	0	4	4
Kevin-Sunburst	11	50	5	3	12	19	31
Miscellaneous	4	0	4	0	7	53	60
Total Dec.	15	50	9	3	19	76	95
Total Nov.	48	4,234	25	6	21	80	101
Difference	33	4,184	16	3	2	4	6

COLORADO

Summary of Field Operations

District—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Boulder Co.	0	0	0	0	1	6	7
Fremont Co.	3	581	0	0	2	14	16
Larimer Co.	0	0	0	0	4	10	14
Moffat Co.	2	1,998	0	0	6	9	15
Routt Co.	1	37	0	0	0	6	6
Rio Blanco Co.	1	0	0	1	1	3	4
Miscellaneous	0	0	0	0	2	35	37
Total Dec.	7	2,616	0	1	16	83	99
Total Nov.	15	731	7	2	8	81	89
Difference	8	1,885	7	1	8	2	10

NEW MEXICO

Summary of Field Operations

	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Total Dec.	6	244	4	0	7	96	112
Total Nov.	11	138	9	1	5	81	86
Difference	5	106	5	1	2	15	27

UTAH

Summary of Field Operations

	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Total Dec.	0	0	0	0	2	25	27
Total Nov.	2	0	2	0	2	24	26
Difference	2	0	2	0	0	1	1

WYOMING

Summary of Field Operations

District—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Salt Creek	8	62	3	0	6	19	25
Big Horn Co.	1	0	1	0	0	6	6
Carbon Co.	1	100	0	0	0	11	11
Converse Co.	0	0	0	0	1	4	5
Fremont Co.	0	0	0	0	1	9	10
Goshen Co.	0	0	0	0	0	1	1
Hot Springs-Washakie	0	0	0	0	1	1	2
Hot Spgs. Co.	0	0	0	0	0	5	5
Johnson Co.	0	0	0	0	0	1	4	5
Natrona Co.	0	0	0	0	1	3	4
Niobrara Co.	0	0	0	0	2	6	8
Park Co.	0	0	0	0	3	27	30
Platte Co.	0	0	0	0	0	2	2
Sweetwater Co.	1	0	1	0	1	11	12
Sublet Co.	7	345	0	0	1	36	37
Uinta Co.	0	0	0	0	0	2	2
Washakie Co.	0	0	0	0	0	3	3
Weston Co.	1*	10	0	0	1	10	11
Total Dec.	17	517	6	0	19	160	179
Total Nov.	16	3,040	6	0	21	147	168
Difference	1	2,523	0	0	2	13	11

SUMMARY OF FIELD OPERATIONS

	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Mirando	18	15	13	4	4	23	27
Rockdale-Minerva	0	0	0	0	0	13	13
Luling	1	50	0	0	0	3	3
Kingsville	1	0	1	0	1	1	2
Refugio	2	0	1	1	2	13	14
Adams Gas Fd.	4	0	1	3	0	3	3
Somerset	*11	65	1	0	0	0	0
Dale Field	5	111	2	0	0	3	3
Miscellaneous	24	0	21	3	10	104	114
Total Dec.	66	241	40	11	17	162	179
Total Nov.	54	227	26	20	26	147	173
Difference	12	14	14	9	9	15	6

*Somerset completions cover period of four months. Miscellaneous includes White Point Gas Field-Lucas Gas Field.

NORTH CENTRAL AND WEST TEXAS

Summary of Wells Completed

West Texas—

County—	Comp.	Prod.	Dry	Gas
Crane	22	13,631	3	0
Crockett	3	11,520	2	0
Fisher	1	0	1	0
Glascock	1	0	1	0
Howard	5	252	5	0
Irion	1	0	1	0
Jones	3	75	2	0
Pecos	51	302,439	3	0
Upton	4	1,986	1	0
Val Verde	1		1	0
Winkler	25	71,111	1	0
Total West Texas	117	401,014	21	0

North Central Texas—

County—	Comp.	Prod.	Dry	Gas
Archer	40	354	27	0
Brown	39	3,719	14	3
Callahan	7	197	2	0
Clay	1	0	1	0
Coleman	8	55	5	2
Comanche	2	0	1	1
Cooke	1	137	3	0
Denton	1	0	1	0
Eastland	15	553	5	1
Foard	1	0	0	1
Haskell	1	0	1	0
Jack	12	234	7	0
Montague	14	99	9	0
Palo Pinto	3	0	1	2
Shackelford	6	75	4	0
Stephens	2	135	1	0
Throckmorton	1	9	1	0
Wichita	43	468	21	0
Wilbarger	12	578	4	0
Young	25	1,839	15	0
Totals, North Tex.	241	8,452	123	10
Grand totals, Dec.	358	409,466	144	10
Grand totals, Nov.	101	248,934	187	15
Difference	43	160,532	43	5

Summary of Rigs and Wells Drilling

West Texas—

County—	Rigs	Drlg.	S.D.	Ttl.
Crane	6	14	1	21
Crockett	2	6	9	17
Howard	17	29	2	48
Jones	1	2	5	8
Mitchell	..	2	2	4
Pecos	44	52	7	103
Reagan	..	4	14	18
Runnels	5	3	4	12
Upton	4	7	2	13
Winkler	29	69	7	105
Misc. companies	15	37	35	87
West Texas totals, December	123	225	88	436

North Central Texas—

County—	Rigs	Drlg.	S.D.	Ttl.
Archer	7	19	7	33
Brown	8	26	10	44
Callahan	3	10	10	23
Coleman	7	19	17	43
Cooke	4	2	5	11
Eastland	8	27	6	41
Jack	4	10	11	25
Montague	4	12	3	19
Shackelford	2	7	5	14
Stephens	4	13	8	25
Throckmorton	..	2	2	4
Wichita	4	11	3	18
Wilbarger	7	33	5	45
Young	7	34	11	52
Misc. counties	1	21	38	60
North Central Texas totals, December	70	246	141	457
Grand total North Central and West Texas, December	193	471	229	893
Grand total North Central and West Texas, November	222	465	212	899
Difference	29	6	17	6

TEXAS PANHANDLE

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Armstrong	1	0	1	0
Childress	1	0	1	0
Carson	5	210	1	1
Gray	14	8,777	1	1
Hutchinson	10	2,207	2	0
Moore	1	0	0	1
Totals, December	32	11,194	6	3
Totals, November	31	3,990	7	8
Difference	1	7,204	1	5

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	S.D.	Ttl.
Carson	2	3	5	5
Gray	14	36	5	55
Hutchinson	9	17	4	30
Wheeler	6	6	3	15
Misc. counties	5	16	31	52
Totals, December	34	78	45	157
Totals, November	34	79	55	168
Difference	..	1	10	11

GULF COAST FIELDS

	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Austin	5	20	3	0	2	1	3
Brazoria	3	125	2	0	1	6	7
Chambers	0	0	0	0	5	6	11
Fort Bend	12	5,315	4	0	2	17	19
Hardin	6	69	3	0	1	8	9
Harris	7	3,115	2	0	8	24	32
Jefferson	19	13,786	9	0	14	14	28
Liberty	8	2,620	2	0	0	19	19
Matagorda	1	0	0	1	0	2	2
Orange	4	733	0	0	0	11	11
Wharton	19	1,478	14	0	8	14	22
Misc. Texas	9	5	8	0	12	2	14
Acadia	4	75	3	0	2	4	6
Calcasieu	8	1,525	4	0	3	18	21
Cameron	1	200	0	0	2	6	8
Misc. La.	7	25	6	0	4	13	17
Total Dec.	113	29,391	60	1	64	165	229
Total Nov.	96	32,127	41	2	39	172	211
Difference	17	2,736	19	1	25	7	18

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Bradley	0	0	0	0	1	1
Calhoun	1	0	1	0	0	0
Clark	0	0	0	0	1	1	2
Clay	0	0	0	0	0	1	1
Cleveland	0	0	0	0	0	1	1
Columbia	1	0	1	0	1	3	4
Drew	0	0	0	0	0	1	1
Faulkner	0	0	0	0	0	1	1
Franklin	0	0	0	0	0	1	1
Garland	0	0	0	0	0	2	2
Grant	0	0	0	0	0	1	1
Hempstead	0	0	0	0	0	1	1
Jackson	0	0	0	0	0	1	1
Lafayette	0	0	0	0	0	1	1
Lincoln	0	0	0	0	0	1	1
Little River	0	0	0	0	0	1	1
Miller	1	0	1	0	0	1	1
Nevada Co.	6	395	0	0	0	6	6
Ouachita	4	77	2	1	1	7	8
Pike	0	0	0	0	0	1	1
Poinsett	0	0	0	0	0	1	1
Pope	0	0	0	0	0	1	1
Union	9	99	4	3	8	35	43
Total Dec.	22	571	9	4	11	70	81
Total Nov.	27	1,478	16	3	55	27	82
Difference	5	907	7	1	44	43	1

Gas production: Ouachita County, 5,000,000; Union, 32,000,000; total, 37,000,000.

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	DryGas	*Rigs	Drg.	Ttl.
Bienville	0	0	0	0	3	3
Bossier	13	95	1	9	3	9	12
Caddo	17	932	7	3	12	42	54
Caldwell	0	0	0	0	1	1
Catahoula	3	0	3	0	0	1	1
Claiborne	0	0	0	0	1	1	2
De Soto	3	93	0	0	4	8	12
Franklin	0	0	0	0	0	3	3
Grant	0	0	0	0	1	2	3
LaSalle	2	110	0	0	0	2	2
Madison	0	0	0	0	1	0	1
Monroe dist.	9	0	2	7	8	15	23
Natchitoches	1	0	1	0	0	0	0
Rapides	0	0	0	0	0	1	1
Red River	1	53	0	0	0	2	2
Richland	9	0	3	6	12	11	23
Sabine	3	240	0	0	1	8	9
Webster	4	20	0	3	4	9	13
West Carroll	1	0	1	0	0	1	1
Winn	1	0	1	0	0	2	2
Total Dec.	67	1,543	19	28	47	121	168
Total Nov.	64	4,382	26	16	86	90	176
Difference	3	2,839	7	12	39	31	8

EAST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	DryGas	*Rigs	Drg.	Ttl.
Cass	0	0	0	0	1	0	1
Harrison	10	20	3	6	4	5	9
Marion	1	5	0	0	0	1	1
Panola	5	9	1	3	4	8	12
Shelby	0	0	0	0	0	2	2
Total Dec.	16	34	4	9	9	16	25
Total Nov.	11	0	2	9	11	14	25
Difference	5	34	2	0	2	2	0

*Gas production: Harrison, 24,500,000; Panola, 9,000,000; total, 33,500,000.

EAST CENTRAL TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Anderson	2	....	2	0	0	2	2
Cherokee	1	....	1	0	0	1	1
Limestone	2	240	1	0	1	3	4
Smith	1	....	1	0	0	0	0
Navarro	0	....	0	0	1	0	1
Freestone	0	....	0	0	0	2	2
Total Dec.	6	240	5	0	2	8	10
Total Nov.	10	450	5	1	0	10	10
Difference	4	210	0	1	2	2	0

EASTERN FIELDS

Fields—	Comp.	Prod.	Dry	Gas
Allegany	25	40	0	0
Bradford	114	212	1	0
Middle Field	4	3	0	1
Venango-Clarion	19	17	1	4
Butler-Armstrong	5	2	2	1
S. W. Penna	10	11	5	2
West Virginia	70	284	12	35
S. E. Ohio	54	408	15	14
Totals, Dec. 31	301	977	37	57
Totals, Nov. 30	387	1,644	56	86
Difference	86	667	19	29

Summary of Work Under Way

Fields—	Rigs	Drlg.	Total
Allegany	13	30	43
Bradford	11	61	72
Middle Field	0	4	4
Venango-Clarion	1	8	9
Butler-Armstrong	8	6	14
S. W. Penna	4	31	35
West Virginia	26	131	157
S. E. Ohio	21	72	93
Totals, Dec. 31	84	343	427
Totals, Nov. 30	94	380	474
Difference	10	37	47

LIMA FIELD

Summary of Field Operations

Field—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Wood	4	17	1	0	3	1	4
Hancock	0	....	0	0	0	4	4
Allen	4	100	0	0	0	1	1
Auglaize	3	50	2	0	3	3	6
Sandusky	1	8	0	0	0	1	1
Mercer	1	5	0	0	0	3	3
Van Wert	0	....	0	0	0	2	2
Seneca	0	....	0	0	0	3	3
Lucas	0	....	0	0	0	2	2
Ottawa	1	25	0	0	0	1	1
Shelby	0	....	0	0	0	1	1
Hardin	0	....	0	0	1	1	2
Wyandot	0	....	0	0	0	1	1
Darke	0	....	0	0	0	1	1
Total Dec.	14	205	3	0	7	25	32
Total Nov.	21	339	2	0	4	34	38
Difference	7	134	1	0	3	9	6

MICHIGAN FIELDS

Summary of Field Operations

Field—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Saginaw	4	35	2	0	2	2	4
St. Clair	1	..	1	0	0	0	0
Shiawassee	1	..	1	0	0	1	1
Livingstone	1	..	1	0	0	0	0
Muskegon	1	20	0	0	0	0	0
Macomb	1	3	0	0	0	0	0
Arenac	1	..	1	0	0	0	0
Crawford	0	..	0	0	0	1	1
Charlevoix	0	..	0	0	0	1	1
Midland	0	..	0	0	0	1	1
Roscommons	0	..	0	0	0	1	1
Sanilac	0	..	0	0	0	1	1
Isabelle	0	..	0	0	0	1	1
Alpena	0	..	0	0	0	1	1
Total Dec.	10	58	5	1	2	10	12
Total Nov.	4	80	1	0	0	20	20
Difference	6	22	4	1	2	10	8

INDIANA

Summary of Field Operations

Field—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Blackford	0	..	0	0	0	2	2
Jay	1	..	1	0	0	3	3
Grant	0	..	0	0	0	2	2
Huntington	0	..	0	0	0	1	1
Randolph	0	..	0	0	0	2	2
Gibson	1	..	1	0	0	9	9
Pike	3	..	3	0	0	1	1
Daviess	3	40	1	0	0	5	5
Sullivan	1	..	1	0	0	6	6
Vigo	0	..	0	0	0	11	11
Allen	0	..	0	0	2	2	4
Knox	1	..	1	0	0	1	1
Dubois	0	..	0	0	0	1	1
Benton	0	..	0	0	0	1	1
Johnson	0	..	0	0	3	0	3
Marion	0	..	0	0	0	1	1
Fountain	0	..	0	0	0	1	1
Martin	1	..	1	0	0	2	2
Monroe	0	..	0	0	0	1	1
Spencer	0	..	0	0	0	1	1
Bartholomew	0	..	0	0	0	1	1
Miami	0	..	0	0	0	1	1
White	0	..	0	0	0	1	1
Montgomery	0	..	0	0	0	1	1
Lagrange	0	..	0	0	0	1	1
Wabash	0	..	0	0	0	1	1
Shelby	1	..	1	0	0	0	0
Greene	0	..	0	0	0	1	1
Harrison	2	..	1	1	0	2	2
Henry	0	..	0	0	0	1	1
Total Dec.	14	40	10	2	5	63	68
Total Nov.	28	308	10	5	5	62	67
Difference	14	268	0	3	0	1	1

ILLINOIS FIELD

Summary of Field Operations

Field—	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Clark	2	20	1	0	0	3	3
Cumberland	0	..	0	0	0	2	2
Crawford	4	5	2	0	2	2	4
Lawrence	2	30	0	0	0	5	5
Wabash	4	..	4	0	2	5	7
Morgan	0	..	0	0	0	1	1
Marshall	0	..	0	0	0	1	1
Macon	0	..	0	0	0	1	1
Madison	0	..	0	0	0	2	2
Shelby	0	..	0	0	0	1	1
St. Clair	0	..	0	0	0	1	1
Tazewell	0	..	0	0	0	1	1
Total Dec.	12	55	7	0	4	25	29
Total Nov.	19	215	7	0	3	31	34
Difference	7	160	0	0	1	6	5

CENTRAL OHIO

Summary of Field Operations

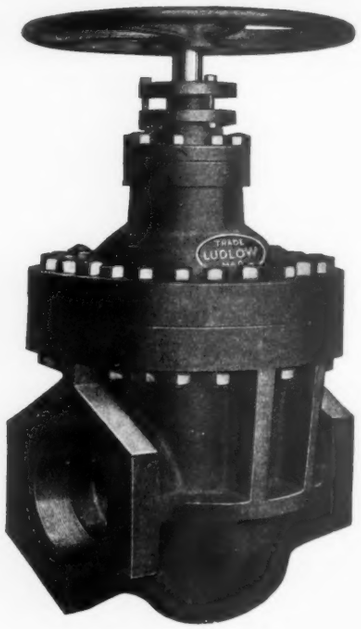
	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Knox	2	..	2	0	2	1	3
Ashland	4	..	1	3	4	13	17
Medina	3	..	2	1	2	4	6
Lorain	1	..	0	1	0	5	5
Wayne	3	..	1	2	2	6	8
Holmes	4	..	1	3	1	9	10
Coshocton	4	..	2	2	2	5	7
Cuyahoga	12	10	2	9	0	15	15
Guernsey	0	..	0	0	0	7	7
Gallia	0	..	0	0	2	1	3
Starke	2	..	1	1	0	1	1
Lawrence	1	..	0	1	0	0	0
Fairfield	0	..	0	0	0	1	1
Richland	0	..	0	0	0	1	1
Carroll	0	..	0	0	0	1	1
Summitt	2	..	0	2	0	1	1
Total Dec.	38	10	12	25	15	71	86
Total Nov.	53	56	13	33	19	66	85
Difference	15	46	1	8	4	5	1

KENTUCKY-TENNESSEE

Summary of Field Operations

	Comp.	Prod.	DryGas	Rigs	Drg.	Ttl.
Warren	3	6	0	0	0	10	10
Allen	2	..	2	0	0	12	12
Barren	3	40	0	0	0	17	17
Ohio	35	1,716	13	0	0	42	42
Daviess	7	250	5	0	0	4	15	19
McLean	0	..	0	0	0	3	3
Hancock	0	..	0	0	1	2	3
Cumberland	0	..	0	0	0	1	1
Clinton	0	..	0	0	0	1	1
Butler	0	..	0	0	0	2	2
Hopkins	0	..	0	0	0	1	1
Union	1	10	0	0	0	3	3
Muhlenburg	0	..	0	0	0	1	1
Wayne	2	2	1	0	0	2	2
Estill	8	3	6	0	0	6	6
Lee-Owsley	0	..	0	0	0	1	1
Jo'son-Mag'ffin	4	20	1	0	0	6	6
Floyd-Knott	5	..	1	4	0	3	3
Knox	0	..	0	0	0	3	3
McCreary	1	..	1	0	0	0	0
Clay	1	..	0	1	0	0	0
Total Ky.	72	2,047	30	5	5	131	136
Total Tenn.	10	213	2	0	0	39	39
Total Miss.	0	..	0	0	0	20	29
Total Ala.	0	..	0	0	0	7	7
Florida	0	..	0	0	0	13	13
N. Carolina	0	..	0	0	1	1	1
Total Dec.	82	2,260	32	5	14	211	225
Total Nov.	98	2,509	36	2	14	202	216
Difference	16	249	4	3	0	9	9

"WORTH THEIR WEIGHT IN GOLD"



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LUDLOW VALVES

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Henderson Iron Works, Shreveport, La.
Harrisburg Pipe & Pipe Bending Co., of Texas, Inc., Houston, Texas
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INITIAL PRODUCTION OF DECEMBER'S WELLS

(Continued from Page 33)

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Carter	7	17	24
Creek	20	52	72
Garfield	6	16	16
Grady	10	27	37
Grant	0	15	15
Hughes	1	10	11
Kay	9	28	37
Logan	1	25	26
Muskogee and Wagoner	16	29	45
Okfuskee	9	28	37
Okmulgee	8	30	38
Osage	16	39	55
Pawnee	2	11	13
Payne and Lincoln	6	13	19
Pontotoc	7	48	55
Pottawatomie	10	13	53
Semihole	16	164	180
†Sephens and Cotton	11	749	2 4
Tulsa	6	12	18
Miscellaneous	11	66	77
Total December	153	716	869
Total November	129	770	899
Difference	24	54	30

KANSAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Butler	4	140	2	0
Chautauqua and Elk	6	35	3	0
Cowley	5	50	4	0
Greenwood	15	1,830	4	0
Sumner	10	3,745	0	1
Miscellaneous	8	.....	6	2
Total December	48	5,800	19	3
Total November	137	12,991	45	16
Difference	89	7,191	26	13

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	Ttl.
Butler	5	17	22
Cowley	8	22	30
Elk	1	7	8
Greenwood	14	29	43
Marion	1	10	10
Sumner	10	31	41
Miscellaneous	12	68	80
Total December	50	184	234
Total November	53	174	227
Difference	3	10	7

MONTANA

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Cat Creek	0	0	0	0	0	4	4
Kevin-Sunburst	11	50	5	3	12	19	31
Miscellaneous	4	0	4	0	7	53	60
Total Dec.	15	50	9	3	19	76	95
Total Nov.	48	4,234	25	6	21	80	101
Difference	33	4,184	16	3	2	4	6

COLORADO

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Boulder Co.	0	0	0	0	1	6	7
Fremont Co.	3	581	0	0	2	14	16
Larimer Co.	0	0	0	0	4	10	14
Moffat Co.	2	1,998	0	0	6	9	15
Routt Co.	1	37	0	0	0	6	6
Rio Blanco Co.	1	0	0	1	1	3	4
Miscellaneous	0	0	0	0	2	35	37
Total Dec.	7	2,616	0	1	16	83	99
Total Nov.	15	731	7	2	8	81	89
Difference	8	1,885	7	1	8	2	10

NEW MEXICO

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Total Dec.	6	244	4	0	7	96	113
Total Nov.	11	138	9	1	5	81	86
Difference	5	106	5	1	2	15	27

UTAH

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Total Dec.	0	0	0	0	2	25	27
Total Nov.	2	0	2	0	2	24	26
Difference	2	0	2	0	0	1	1

WYOMING

Summary of Field Operations

District—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Salt Creek	6	62	4	0	6	19	25
Big Horn Co.	1	0	1	0	0	6	6
Carbon Co.	1	100	0	0	0	11	11
Converse Co.	0	0	0	0	1	4	5
Fremont Co.	0	0	0	0	1	9	10
Goshen Co.	0	0	0	0	0	1	1
Hot Springs-Washakie	0	0	0	0	1	1	2
Hot Spgs. Co.	0	0	0	0	0	5	5
Johnson Co.	0	0	0	0	1	4	5
Natrona Co.	0	0	0	0	1	3	4
Niobrara Co.	0	0	0	0	2	6	8
Park Co.	0	0	0	0	3	27	30
Platte Co.	0	0	0	0	0	2	2
Sweetwater Co.	1	0	1	0	1	11	12
Sublet Co.	7	345	0	0	1	36	37
Uinta Co.	0	0	0	0	0	2	2
Washakie Co.	0	0	0	0	0	3	3
Weston Co.	1*	10	0	0	1	10	11
Total Dec.	17	517	6	0	19	160	179
Total Nov.	16	3,040	6	0	21	147	168
Difference	1	2,523	0	0	2	13	11

SUMMARY OF FIELD OPERATIONS

	Comp.	Prod.	Dry	Gas	Rig	Drg.	Ttl.
Mirando	18	15	13	4	4	23	27
Rockdale-Minerva	0	0	0	0	0	13	13
Luling	1	50	0	0	0	3	3
Kingsville	1	0	1	0	1	1	2
Refugio	2	0	1	1	2	13	14
Adams Gas Fd.	4	0	1	3	0	3	3
Somerset	*11	65	1	0	0	0	0
Dale Field	5	111	2	0	0	3	3
Miscellaneous	24	0	21	3	10	104	114
Total Dec.	66	241	40	11	17	162	179
Total Nov.	54	227	26	20	26	147	173
Difference	12	14	14	9	9	15	6

*Somerset completions cover period of four months. Miscellaneous includes White Point Gas Field-Lucas Gas Field.

NORTH CENTRAL AND WEST TEXAS

Summary of Wells Completed

West Texas—

County—	Comp.	Prod.	Dry	Gas
Crane	22	13,631	3	0
Crockett	3	11,520	2	0
Fisher	1	0	1	0
Glascock	1	0	1	0
Howard	5	252	5	0
Irion	1	0	1	0
Jones	3	75	2	0
Pecos	51	302,439	3	0
Upton	4	1,986	1	0
Val Verde	1	0	1	0
Winkler	25	71,111	1	0
Total West Texas	117	401,014	21	0

North Central Texas—

County—	Comp.	Prod.	Dry	Gas
Archer	40	354	27	0
Brown	29	3,719	14	3
Callahan	7	197	2	0
Clay	1	0	1	0
Coleman	8	55	5	2
Comanche	2	0	1	1
Ceoke	8	137	3	0
Denton	1	0	1	0
Eastland	15	553	5	1
Foard	1	0	0	1
Haskell	1	0	1	0
Jack	12	234	7	0
Montague	14	98	9	0
Palo Pinto	3	0	1	2
Shackelford	6	75	4	0
Stephens	2	135	1	0
Throckmorton	1	9	1	0
Wichita	43	468	21	0
Wilbarger	12	578	4	0
Young	25	1,839	15	0
Totals, North Tex.	241	8,452	123	10
Grand totals, Dec.	358	409,466	144	10
Grand totals, Nov.	101	248,934	187	15
Difference	43	160,532	43	5

Summary of Rigs and Wells Drilling

West Texas—

County—	Rigs	Drlg.	S.D.	Ttl.
Crane	6	14	1	21
Crockett	2	6	9	17
Howard	17	29	2	48
Jones	1	2	5	8
Mitchell	..	2	2	4
Pecos	44	52	7	103
Reagan	..	4	14	18
Runnels	5	3	4	12
Upton	4	7	2	13
Winkler	29	69	7	105
Misc. companies	15	37	35	87
West Texas totals, December	123	225	88	436

North Central Texas—

County—	Rigs	Drlg.	S.D.	Ttl.
Archer	7	19	7	33
Brown	8	26	10	44
Callahan	3	10	10	23
Coleman	7	19	17	43
Cooke	4	2	5	11
Eastland	8	27	6	41
Jack	4	10	11	25
Montague	4	12	3	18
Shackelford	2	7	5	14
Stephens	4	13	8	25
Throckmorton	..	2	2	4
Wichita	4	11	3	18
Wilbarger	7	33	5	45
Young	7	34	11	52
Misc. counties	1	21	38	60
North Central Texas totals, December	70	246	141	457
Grand total North Central and West Texas, December	193	471	229	893
Grand total North Central and West Texas, November	222	465	212	899
Difference	29	6	17	6

TEXAS PANHANDLE

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Armstrong	1	0	1	0
Childress	1	0	1	0
Carson	5	210	1	1
Gray	14	8,777	1	1
Hutchinson	10	2,207	2	0
Moore	1	0	0	1
Totals, December	32	11,194	6	3
Totals, November	31	3,990	7	8
Difference	1	7,204	1	5

Summary of Rigs and Wells Drilling

County—	Rigs	Drlg.	S.D.	Ttl.
Carson	..	3	2	5
Gray	14	36	5	55
Hutchinson	9	17	4	30
Wheeler	6	6	3	15
Misc. counties	5	16	31	52
Totals, December	34	78	45	157
Totals, November	34	79	55	168
Difference	..	1	10	11

GULF COAST FIELDS

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Austin	5	20	3	0	2	1	3
Brazoria	3	125	2	0	1	6	7
Chambers	0	0	0	0	5	6	11
Fort Bend	12	5,315	4	0	2	17	19
Hardin	6	69	3	0	1	8	9
Harris	7	3,115	2	0	8	24	32
Jefferson	19	13,786	9	0	14	14	28
Liberty	8	2,620	2	0	0	19	19
Matagorda	1	0	0	1	0	2	2
Orange	4	733	0	0	0	11	11
Wharton	19	1,478	14	0	8	14	22
Misc. Texas	9	5	8	0	12	2	14
Acadia	4	75	3	0	2	4	6
Calcasieu	8	1,525	4	0	3	18	21
Cameron	1	200	0	0	2	6	8
Misc. La.	7	25	8	0	4	13	17
Total Dec.	113	29,391	60	1	64	165	229
Total Nov.	96	32,127	41	2	39	172	211
Difference	17	2,736	19	1	25	7	18

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Dlg.	Ttl.
Bradley	0	0	0	0	0	1	1
Calhoun	1	0	1	0	0	0	0
Clark	0	0	0	0	1	1	2
Clay	0	0	0	0	0	1	1
Cleveland	0	0	0	0	0	1	1
Columbia	1	0	1	0	1	3	4
Dreee	0	0	0	0	0	1	1
Faulkner	0	0	0	0	0	1	1
Franklin	0	0	0	0	0	1	1
Garland	0	0	0	0	0	2	2
Grant	0	0	0	0	0	1	1
Hempstead	0	0	0	0	0	1	1
Jackson	0	0	0	0	0	1	1
Lafayette	0	0	0	0	0	1	1
Lincoln	0	0	0	0	0	1	1
Little River	0	0	0	0	0	1	1
Miller	1	0	1	0	0	1	1
Nevada Co.	6	395	0	0	0	6	6
Ouachita	4	77	2	1	1	7	8
Pike	0	0	0	0	0	1	1
Poinsett	0	0	0	0	0	1	1
Pope	0	0	0	0	0	1	1
Union	9	99	4	3	8	35	43
Total Dec.	22	571	9	4	11	70	81
Total Nov.	27	1,478	16	3	55	27	82
Difference	5	907	7	1	44	43	1

Gas production: Ouachita County, 5,000,000; Union, 32,000,000; total, 37,000,000.

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry	Gas*	Rigs	Dlg.	Ttl.
Bienville	0	0	0	0	3	3	3
Bossier	13	95	1	9	3	9	12
Caddo	17	932	7	3	12	42	54
Caldwell	0	0	0	0	0	1	1
Catahoula	3	0	3	0	0	1	1
Claiborne	0	0	0	0	1	1	2
De Soto	3	93	0	0	4	8	12
Franklin	0	0	0	0	0	3	3
Grant	0	0	0	0	1	2	3
LaSalle	2	110	0	0	0	2	2
Madison	0	0	0	0	1	0	1
Monroe dist.	9	0	2	7	8	15	23
Natchitoches	1	0	1	0	0	0	0
Rapides	0	0	0	0	0	1	1
Red River	1	53	0	0	0	2	2
Richland	9	0	3	6	12	11	23
Sabine	3	240	0	0	1	8	9
Webster	4	20	0	3	4	9	13
West Carroll	1	0	1	0	0	1	1
Winn	1	0	1	0	0	2	2
Total Dec.	67	1,543	19	28	47	121	168
Total Nov.	64	4,382	26	16	86	90	176
Difference	3	2,839	7	12	39	31	8

EAST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas*	Rigs	Dlg.	Ttl.
Cass	0	0	0	0	1	0	1
Harrison	10	20	3	6	4	5	9
Marion	1	5	0	0	0	1	1
Panola	5	9	1	3	4	8	12
Shelby	0	0	0	0	0	2	2
Total Dec.	16	34	4	9	9	16	25
Total Nov.	11	0	2	9	11	14	25
Difference	5	34	2	0	2	2	0

*Gas production: Harrison, 24,500,000; Panola, 9,000,000; total, 33,500,000.

EAST CENTRAL TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Anderson	2	....	2	0	0	2	2
Cherokee	1	....	1	0	0	1	1
Limestone	2	240	1	0	1	3	4
Smith	1	....	1	0	0	0	0
Navarro	0	....	0	0	1	0	1
Freestone	0	....	0	0	0	2	2
Total Dec.	6	240	5	0	2	8	10
Total Nov.	10	450	5	1	0	10	10
Difference	4	210	0	1	2	2	0

EASTERN FIELDS

Fields—	Comp.	Prod.	Dry	Gas
Allegany	23	40	0	0
Bradford	114	212	1	0
Middle Field	4	3	0	1
Venango-Clarion	19	17	1	4
Butler-Armstrong	5	2	2	1
S. W. Penna	10	11	5	2
West Virginia	70	284	13	35
S. E. Ohio	54	408	15	14
Totals, Dec. 31	301	977	37	57
Totals, Nov. 30	387	1,644	56	86
Difference	86	667	19	29

Summary of Work Under Way

Fields—	Rigs	Drlg.	Total
Allegany	13	30	43
Bradford	11	61	72
Middle Field	0	4	4
Venango-Clarion	1	8	9
Butler-Armstrong	8	6	14
S. W. Penna	4	31	35
West Virginia	26	131	157
S. E. Ohio	21	72	93
Totals, Dec. 31	84	343	427
Totals, Nov. 30	94	380	474
Difference	10	37	47

LIMA FIELD

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wood	4	17	1	0	3	1	4
Hancock	0	....	0	0	0	4	4
Allen	4	160	0	0	0	1	1
Auglaize	3	50	2	0	3	3	6
Sandusky	1	8	0	0	0	1	1
Mercer	1	5	0	0	0	3	3
Van Wert	0	....	0	0	0	2	2
Seneca	0	....	0	0	0	3	3
Lucas	0	....	0	0	0	2	2
Ottawa	1	25	0	0	0	1	1
Shelby	0	....	0	0	0	1	1
Hardin	0	....	0	0	1	1	2
Wyandot	0	....	0	0	0	1	1
Darke	0	....	0	0	0	1	1
Total Dec.	14	205	3	0	7	25	32
Total Nov.	21	339	2	0	4	34	38
Difference	7	134	1	0	3	9	6

MICHIGAN FIELDS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Saginaw	4	35	2	0	2	2	4
St. Calir	1	..	0	1	0	0	0
Shiawassee	1	..	1	0	0	1	1
Livingstone	1	..	1	0	0	0	0
Muskegon	1	20	0	0	0	0	0
Macomb	1	3	0	0	0	0	0
Arenac	1	..	1	0	0	0	0
Crawford	0	..	0	0	0	1	1
Charlevoix	0	..	0	0	0	1	1
Midland	0	..	0	0	0	1	1
Roscommons	0	..	0	0	0	1	1
Sanilac	0	..	0	0	0	1	1
Isabelle	0	..	0	0	0	1	1
Alpena	0	..	0	0	0	1	1
Total Dec.	10	58	5	1	2	10	12
Total Nov.	4	80	1	0	0	20	20
Difference	6	22	4	1	2	10	8

INDIANA

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Blackford	0	..	0	0	0	2	2
Jay	1	..	1	0	0	3	3
Grant	0	..	0	0	0	2	2
Huntington	0	..	0	0	0	1	1
Randolph	0	..	0	0	0	2	2
Gibson	1	..	1	0	0	9	9
Pike	3	..	3	0	0	1	1
Daviess	3	40	1	0	0	5	5
Sullivan	1	..	1	0	0	6	6
Vigo	0	..	0	0	0	11	11
Allen	0	..	0	0	2	2	4
Knox	1	..	1	0	0	1	1
Dubois	0	..	0	0	0	1	1
Benton	0	..	0	0	0	1	1
Johnson	0	..	0	0	3	0	3
Marion	0	..	0	0	0	1	1
Fountain	0	..	0	0	0	1	1
Martin	1	..	1	0	0	2	2
Monroe	0	..	0	0	0	1	1
Spencer	0	..	0	0	0	1	1
Bartholomew	0	..	0	0	0	1	1
Miami	0	..	0	0	0	1	1
Lawrence	0	..	0	0	0	2	2
Montgomery	0	..	0	0	0	1	1
Lagrange	0	..	0	0	0	1	1
Wabash	0	..	0	0	0	1	1
Shelby	1	..	0	1	0	0	0
Greene	0	..	0	0	0	1	1
Harrison	2	..	1	1	0	2	2
Henry	0	..	0	0	0	1	1
Total Dec.	14	40	10	2	5	63	68
Total Nov.	28	308	10	5	5	62	67
Difference	14	268	0	3	0	1	1

ILLINOIS FIELD

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Clark	2	20	1	0	0	3	3
Cumberland	0	..	0	0	0	2	2
Crawford	4	5	0	0	0	2	2
Lawrence	2	30	0	0	0	5	5
Wabash	4	..	4	0	2	5	7
Morgan	0	..	0	0	0	1	1
Marshall	0	..	0	0	0	1	1
Macon	0	..	0	0	0	1	1
Madison	0	..	0	0	0	2	2
Shelby	0	..	0	0	0	1	1
St. Clair	0	..	0	0	0	1	1
Tazewell	0	..	0	0	0	1	1
Total Dec.	12	55	7	0	4	25	29
Total Nov.	19	215	7	0	3	31	34
Difference	7	160	0	0	1	6	5

CENTRAL OHIO

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Knox	2	..	2	0	2	1	3
Ashland	4	..	1	3	4	13	17
Medina	3	..	2	1	2	4	6
Lorain	1	..	0	1	0	5	5
Wayne	3	..	1	2	2	6	8
Holmes	4	..	1	3	1	9	10
Coshocton	4	..	2	2	2	5	7
Cuyahoga	12	10	2	9	0	15	15
Guernsey	0	..	0	0	0	7	7
Gallia	0	..	0	0	2	1	3
Starke	2	..	1	1	0	1	1
Lawrence	1	..	0	1	0	0	0
Fairfield	0	..	0	0	0	1	1
Richland	0	..	0	0	0	1	1
Carroll	0	..	0	0	0	1	1
Summitt	2	..	0	2	0	1	1
Total Dec.	38	10	12	25	15	71	86
Total Nov.	53	56	13	33	19	66	85
Difference	15	46	1	8	4	5	1

KENTUCKY-TENNESSEE

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Warren	3	6	0	0	0	10	10
Allen	2	..	2	0	0	12	12
Barren	3	40	0	0	0	17	17
Ohio	35	1,716	13	0	0	42	42
Daviess	7	250	5	0	4	15	19
McLean	0	..	0	0	0	3	3
Hancock	0	..	0	0	1	2	3
Cumberland	0	..	0	0	0	1	1
Clinton	0	..	0	0	0	1	1
Butler	0	..	0	0	0	2	2
Hopkins	0	..	0	0	0	1	1
Union	1	10	0	0	0	3	3
Muhlenburg	0	..	0	0	0	1	1
Wayne	2	1	0	0	0	2	2
Estill	3	6	0	0	0	6	6
Lee-Owsley	0	..	0	0	0	1	1
Jo'son-Mag'ffin	4	20	1	0	0	6	6
Floyd-Knott	5	..	1	4	0	3	3
Knox	0	..	0	0	0	3	3
McCreary	1	..	1	0	0	0	0
Clay	1	..	0	1	0	0	0
Total Ky.	72	2,047	30	5	5	131	136
Total Tenn.	10	213	2	0	0	39	39
Total Miss.	0	..	0	0	0	9	20	29
Total Ala.	0	..	0	0	0	7	7
Florida	0	..	0	0	0	13	13
N. Carolina	0	..	0	0	0	1	1
Total Dec.	82	2,260	32	5	14	211	225
Total Nov.	98	2,509	36	2	14	202	216
Difference	16	249	4	3	0	9	9

WILDCAT OPERATIONS IN PANHANDLE

(Continued from Page 40)

Cole O. & G. Co.'s (was Magdalene Oil Co.'s) No. 1 J. E. Williams, Sec. 17, Blk. 1 ... S.D., 3,860 ft.
Danciger O. & R. Co.'s No. 4 W. Jackson ... Flowed 225 bbl. first 24 hrs. at 2,990-95 ft; T.D., 3,034 ft; now 234 bbls.
Danciger O. & R. Co.'s No. 5 W. Jackson ... Drlg., 2,365 ft.
Danciger O. & R. Co.'s No. 6 W. Jackson, Sec. 88, Blk. B-2, H. & G. N. Sur. ... Drlg., 2,010 ft.
Danciger O. & R. Co.'s No. 7 W. Jackson, Sec. 88, Blk. B-2, H. & G. N. Sur. ... Drlg., 1,820 ft.
Danciger O. & R. Co.'s No. 8 W. Jackson, NE cor. NW. Sec. 88, Blk. B-2 ... Drlg., 1,290 ft.
Donley Gray Oil Co.'s No. 1 J. W. Gordon, Sec. 79, Blk. 3 ... Wtr. 3,380 ft. and 3,420 ft; show oil; H.F.W., 3,650; S.D., 3,870 ft.
Delaney et al's No. 2 Jackson ... 3,000,000 ft. gas, 2,590 ft., increased to 11,000,000 ft. at 2,760 ft. drlg., 2,994 ft; show oil, 2,850-77 ft; T.D., 3,050 ft; swabbed 50 bbls.
Edwards et al's No. 1 E. J. Case, NE cor. Sec. 182, Blk. B-2, H. & G. N. Sur. ... 70,000,000 ft. gas, 2,512-2,630 ft; drlg. by bit, 3,028 ft; 1,000 ft. oil in hole.
Gardner et al's No. 1 G. H. Saunders ... Rig.
Gibson Oil Corp.'s No. 2 J. B. Bowers ... Stdzing., 2,805 ft.
Gulf's No. 2 Bowers, 990 ft. from S. line and 330 ft. from W. line of W half, Sec. 89, Blk. B-2, H. & G. N. Sur. ... Set 8-in., 2,939 ft.
Gulf's No. 3 Bowers, 330 ft. from SE cor. W half, Sec. 89 ... 5,000,000 ft. gas, 2,750-80 ft.
Gulf's No. 2 Holmes, SE cor. NE, Sec. 107, Blk. 3, I. & G. N. Sur. ... Drlg., 420 ft.
Gurnsey Oil Co.'s No. 1 B. E. McKinney, 1,980 ft. E. and 800 ft. N. of SW cor. Sec. 163, Blk. 3, I. & G. N. Sur. ... 15,000,000 ft. gas, 3,026-3,110 ft.
Gurnsey Oil Co.'s No. 2 B. E. McKinney, Sec. 163, Blk. 3, I. & G. N. Sur. ... Spudding.
Collins & Gardners (formerly Lefors Pet. Co.'s) No. 1 J. Shaw, Lefors townsite ... 10,000,000 ft. gas, 2,440-50 ft; 70,000,000 ft. gas, 2,625 ft; T.D., 2,650 ft; trying to pull 8-in. and it parted; rigging up.
H. C. McCauley et al's No. 1 J. Morse, Sec. 2, Blk. 46, H. & G. N. Sur. ... Top lime, 1,770 ft; 10,000,000 ft. of gas at 2,352-65 ft., show of oil 2,400 ft; gas inc. 2,000,000 ft., 2,435-50 ft., est. 175 bbls., 2,510-11½ ft.
McAuley et al's No. 1 Morse, SE cor. N half, Sec. 2, Blk. 26, H. & G. N. Sur. ... Location.
Empire G. & F. Co.'s No. 1 Bender, SE cor. Sec. 164, Blk. 3, I. & G. N. Sur. ... Location.
Magnolia Pet. Co.'s No. 1 J. Bowers ... Fish., 2,025 ft.
Magnolia Pet. Co.'s No. 1 J. J. Wall, NE cor. Sec. 162, Blk. 3, I. & G. N. Sur. ... Drlg., 720 ft.
McMan Oil & Gas Co.'s No. 1 Osborne, NE cor. W half SE, Sec. 86, Blk. 3, I. & G. N. Sur. ... Rigging up.
Midwest Explt'n. Co.'s No. 1 J. Bowers, NW cor. W half SW, Sec. 63, Blk. B-2, H. & G. N. Sur. ... Topped G.W., 2,785 ft; show oil, 2,958 ft; 700 ft. oil in hole, 3,620 ft; fishing.
Midwest Explt'n. Co.'s No. 1 L. Holmes, Sec. 86, Blk. 3, I. & G. N. Sur. ... Rigging up.
Neudigate et al's No. 1 A. Chapman, NE cor. E ½, SE. Sec. 52, Blk. 25 ... 500,000 ft. gas, 2,760-65 ft; rainbow of oil, 2,820-25 ft; salt wtr; G.W., 2,827-28 ft; S.D., 2,835 ft.
Operators Oil Co.'s No. 1 Jackson ... Flowed 1,800 bbls. in 24 hrs. from best G. W. pay, 2,967-84 ft., running 5-in to 2,990 ft. S. L. M. C.O.
Operators Oil Co.'s No. 2 W. Jackson, NW cor. N ½ NE. Sec. 88, Blk. B-2 ... Rigging up.
Phillips Pet. Co.'s No. 1 Davidson (Myson) ... Drlg., 400 ft.
Phillips Pet. Co.'s No. 1 W. Jackson (was Clark et al's No. 2) ... S.O., 2,890 ft; run 6-in., 2,905 ft.
Phillips Pet. Co.'s No. 2 W. Jackson (was Clark et al's No. 3) ... Swab, 100 bbls. in 12 hrs., 2,892 ft.
Phillips Pet. Co.'s No. 3 W. Jackson ... Fish., 1,100 ft.
Phillips Pet. Co.'s No. 1 Jackson-Riley (was Clark et al's No. 1 W. Jackson) ... 7,000,000 ft. gas, 2,442-2,545 ft; swabbed 160 bbls. at 2,981 ft. S. D. 2,942-54 ft.
Phillips Pet. Co.'s No. 2 Jackson-Riley ... Fish., 2,310 ft.
Phillips Pet. Co.'s No. 3 Jackson Riley, Sec. 88, Blk. B-2, H. & G. N. Sur. ... Rig on ground.
Pampa Oil Co.'s No. 1 W. R. Campbell, Sec. 90, Blk. 3 ... Drlg., 3,433 ft.; 700 ft water, 3,430 ft; S.D., 3,432 ft.
Purple Sage Oil Co.'s No. 2 E. B. Johnson ... Drlg., 525 ft.
Ray & Massie's No. 1 A. Chapman, NE NW SW, Sec. 51, Blk. 25 ... Location.
Remo Oil Co.'s No. 1 B. E. McKinney ... Rigged up and S.D.
Smallwood et al's No. 1 W. H. Taylor, C NE, Sec. 10, Blk. B-2 ... Rig.
St. Clair Oil Co.'s No. 1 C. H. Rowe ... Spud. and S.D.
St. Calir Oil Co.'s No. 1 L. S. Stocklon, SE cor. Sec. 35, W. R. Lee Sur. ... Rig on ground.
Shamrock Pet. Co. et al's No. 1 J. B. Back, SE NW SW, Sec. 44, Blk. 25 ... Fish., 2,685 ft.
Shamrock Oil Co.'s No. 1 Chapman, NE E half SW, Sec. 50, Blk. 25 ... Drlg., 400 ft.
Skelly Oil Co.'s No. 1 Bradford, NE cor. Sec. 118, Blk. B-2, H. & G. N. Sur. ... Drlg., 600 ft.
Skelly Oil Co.'s No. 1 W. Jackson ... 7,000,000 ft. gas, 2,780 ft. S. O. at 2,865-70 ft; exhausted little fresh wtr., 3,012 ft; swabbed 50 bbl., 3,012 ft.
Skelly Oil Co.'s No. 2 Jackson ... Drlg., 2,700 ft.
Spartan Oil Co.'s No. 1 J. Hopkins ... Rig.
Sullivan et al's No. 1 A. Chapman-A ... Spudded and S.D.
Sun Oil Co.'s No. 1 Jackson ... Drlg., 1,270 ft.
Staggers Oil Co.'s (was Ruby Oil Co.'s) No. 1 B. F. Tally ... T.D., 635 ft; S.D.
The Texas Company's No. 1 J. B. Bowers ... Drlg., 2,750 ft; 4,000,000 ft gas.
The Texas Company's No. 2 J. B. Bowers ... Drlg., 2,690 ft.
The Texas Company's No. 3 J. B. Bowers ... Drlg., 690 ft.
The Texas Company's No. 4 J. B. Bowers, SE cor. SE. Sec. 93, Blk. B-2 ... Rigging up.
The Texas Company's No. 2 H. M. Davis, SW cor. NW, Sec. 86, Blk. 3 ... Rig.
The Texas Company's No. 1 McLarty et al, SW cor. E ½ NW, Sec. 1, Blk. 1, A. C. H. & B. Sur. ... Rigging up.
The Texas Company's No. 1 S. McLarty ... Rig.
The Texas Company's No. 4 G. H. Saunders ... 6,000,000 ft. gas, 2,495 ft; set 6-in., 2,673 ft.
El Rio Oil Co.'s No. 1 Cockrell, 330 ft. SE cor. W 40 SE 80 N 320, Sec. 4, Blk. 23, B. S. & F. Sur. ... Spray oil, 2,975-80 ft; swab. 19 bbls., 3,040-75 ft., 10 bbls.

HALE COUNTY

Bailey & Young's No. 1 Thomas, Sec. 1, Blk. J.K.L. ... S.D., 175 ft.
Donnell Pet. Co.'s No. 2 Mullican, NW cor. Sec. 66, Blk. A-3 I. & S. B. Sur. ... Top pay in sandy shale, 405 ft; ½ bailer oil and 3 bailers wtr. per day; S.D., 620 ft.
Donnell Pet. Co.'s No. 1 Mullican, C Sec. 21, Blk. B. R. M. Thompson Sur. ... 200 ft. fluid in hole from 407-14 ft; S.D.
Explt'n. Co.'s No. 1 Crawford, C NE, Sec. 17, Blk. C-3, T. T. R. R. Sur. ... Spudded and S.D.
Explt'n. Co.'s No. 1 Goodman ... Spudded and S.D.
A. S. Mimm's No. 1 W. A. Ritcher, 700 ft. from east line and 1,200 feet from south line, Sec. 17, Blk. X, John Glynn Sur. ... S.D., 1,140 ft.
Tolbert & Simms' (was Gouldy & Stone's) No. 1 Kitteral, SE cor. NW, Sec. 65, Blk. A-3, G. C. & S. F. Sur. ... S.D., 485 ft.

HALL COUNTY

Briscoe Oil Assn.'s (was Seifert et al's) No. 1 Owens, C NE, Sec. 179, Blk. S-5, Dennison & Pacific Sur. ... Spudded and S.D.

HANSFORD COUNTY

Caldwell et al's No. 1 J. Adriance est. ... S.D. for pipe, 645 ft.
Oklavania et al's No. 1 Coots, Sec. 13, Blk. 46, H. & T. C. Sur. ... S.D., 560 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood ... S.D., 1,455 ft. to install rotary.

HARTLEY COUNTY

Deep Rock Oil Co.'s No. 1 Lymann & Balfour, Sec. 9 ... Preparing to abd., 4,038 ft.
Eslick et al's No. 1 J. R. Irving, Sec. 13, Blk. 13 ... Topped G.W., 3,103 ft; show oil 3,226 ft; hole full wtr., 3,748-55 ft; S.D., 4,000 ft.

HEMPHILL COUNTY

Hoover et al's No. 1 Schaller est., Sec. 4 ... Spudded and S.D.
Hoover et al's No. 1 fee, J. S. Hood Sur. ... Drlg., 4,860 ft.

HUTCHINSON COUNTY

R. G. Barnum et al's No. 1 Garland Sanford, Sec. 78, Blk. 46 ... Rig.
Beam et al's No. 1 Cockrell, Sec. 3, Blk. 23 ... S.D., 405 ft. for orders.
Big Coach Oil Co.'s No. 1 Dunnaway, Sec. 5, Blk. Y ... S.D., 750 ft.
Conklin et al's No. 1 Johnson, Sec. 1, Blk. X03, H. & O. B. Sur. ... S.D., 600 ft.
Harris et al's No. 1 J. Q. Bost, Sec. 10, Blk. Y-2, T. T. R. R. Sur. ... S.D., 265 ft.
Holmes & Quinn's No. 1 J. K. Quinn, SW cor. Sec. 9, Blk. 3, B. S. & F. Sur. ... Rig, U. S. D.
McMan O. & G. Co.'s No. 1 Albert Yake, SW cor. SE. Sec. 2, Blk. J. H. & G. N. Sur. ... S.D., 1,585 ft.
Phillips Pet. Co.'s No. 12 Elva-Whittenburg, E. Tomlinson Sur. ... T.A., 4,445 ft.
Phillips Pet. Co.'s No. 1 Perkins-Hamilton, SW cor. of N 240 acres of S half, Sec. 22, Blk. 47, H. & T. C. Sur. ... Loc.
Phillips Pet. Co. and White Eagle O. & R. Co.'s No. 1 Lee Bivins ... Top pay 2,994 ft., total depth, 2,994 ft., swabbed 200 bbls. 1st 24 hrs.; to drill deeper.
Prairie O. & G. Co. and Vacuum Oil Co.'s No. 2 Cal Merchant, Sec. 37, Blk. 47 (100 ft. N. of No. 1) ... Top lime, 1,775 ft; drlg., 2,200 ft.
Skelly Oil Co.'s No. 2 Armstrong & Byrd ... Drlg., 240 ft.
Skyrocket Oil Co.'s No. 1 Mrs. R. A. Jameson ... C.O., 3,146 ft; 800 ft. oil in hole.
The Texas Co.'s No. 1 Cockrell-B, Sec. 3, Blk. B-3 ... T.P., 3,015 ft; 500 ft. oil in hole; run liner, 3,040 ft.
Timms et al's No. 1 C. R. Garner ... Top lime, 2,444 ft; drlg.

KING COUNTY

Humble O. & R. Co.'s No. 1 Pitchfork, Sec. 171, Blk. A-96, John H. Gibson Sur. ... Drlg., 3,253 ft.
J. L. Pattison's No. 1 Patton ... Slight show gas, 2,115-30 ft.; fish 3,410 ft.

LAMB COUNTY

Dan Freel et al's No. 1 Ellwood, CWL S.ec. 9, Blk. T. T. A. Thompson Sur. ... Rig.
Spade Oil Co.'s No. 1 Andrews, 1,085 ft. from N line and 200 ft. from E line, Labor 23, League 643, (5 miles NE of Littlefield) ... Spudding.
Tolbert & Simms' No. 1 Ellwood, NE SW SW, Sec. 14, Blk. B, R. M. Thompson Sur. ... 712 ft; small show oil and hole full wtr.; drlg., 985 ft.

LIPSCOMB COUNTY

Cal-Tex's No. 1 Bradford, C NE NE, Sec. 899, Blk. 43, H. & T. C. Sur. ... Spudded and S.D.
Camp Creek Oil Co.'s No. 1 Mrs. H. D. May, Sec. 612, Blk. 43 ... S.D., 2,000 ft.
McCorkle's No. 1 A. Barton, NE cor. SW SE, Sec. 504, Blk. 43, H. & T. C. Sur. ... Wtr. in lime, 4,126-40 ft; 6-in set, 4,155 ft; S.D., 4,225 ft.
Ozark Drlg. Co.'s No. 1 Frass, NE SE, Sec. 106, Blk. 10, H. & T. C. Sur. ... Rig on ground.
Smith, Kinsley & Ruby's No. 1 C. W. Jones, NE cor. SW, Sec. 100, Blk. 43 ... Show oil, 3,520 ft; S.W., 3,900 ft; S.D. in lime and blue shale, 4,355 ft. for 6-in.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles ranch ... Small show oil, 1,133-40 ft., in sand; shut down 2,730 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Thompson-Amarillo, Cen. Sec. 22, Blk. 26, E. L. & R. R. Sur. ... Rig on ground.
Prairie and Shamrock's No. 2 Gober, Sec. 16, Blk. M-21 ... T.D., 2,520 ft; recmt. 12-in., 1,525 ft; drlg. by tools.

MOTLEY COUNTY

Explt'n. Co.'s No. 1 Burleson ... Spudded and S.D.
Explt'n. Co.'s No. 1 Tillson ... S.D., 750 ft. for repairs.
Explt'n. Co.'s No. 1 Matador Land & Cattle Co., C SW, Sec. 37, John Gibson Sur. ... S.D., 1,002 ft.
Wheeler et al's No. 1 C. D. Bird, C NE, Sec. 4, Blk. S, Stephens Sur. ... Spudded and S.D.

OLDHAM COUNTY

Prairie O. & G. Co.'s No. 1 Landegrin, SE cor. NE SW, Sec. 46, League 310, Capital land ... 1,900 ft. wtr., 4,085-93 ft; 1 bailer wtr. per hr. and light scum oil 4,527 ft. (steel line meas.) cmt 6-in., 4,442 ft; 2,000 ft. S.W., 4,850-56 ft; drlg., 5,260 ft.

OCHILTREE COUNTY

W. G. Burton's No. 1 Strickler ... S.D., 3,940 ft.
Hamilton et al, H. E. Wamble ... Shut down, 250 ft.
McCorkle P. L. Co.'s No. 1 R. H. Moore ... Shut down, 1,600 ft.
Montgomery's No. 1 Weinett ... Shut down, 850 ft.
Standard Development Co.'s No. 1 Bowen ... Shut down, 900 ft.

POTTER COUNTY

Amarillo Oil Co.'s No. 1 Masterson-K, C SW, Sec. 85, Blk. O-18, D. & P. R. R. Sur. ... Rig on ground.
Amarillo Oil Co.'s No. 1 Fuqua, C NW, Sec. 18, Blk. 6, B. S. & F. Sur. ... Location.
Frank Allen et al's No. 1 W. H. Bush ... Drlg., 300 ft.
Prairie O. & G. Co.'s No. 2 Lee Bivins, 660 ft. N. and 330 ft. W. of SE cor. Sec. 39, Blk. M-20, G. & M. Sur. ... Drlg., 1,900 ft.

RANDALL COUNTY

Westbrook Oil Co.'s No. 1 J. Beckman, SW cor. SE NE, Sec. 46, Blk. B-5 ... Drlg., 1,200 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Mrs. H. Ledrick & Sons, Sec. 7, Blk. 5-A ... Show gas, 4,990 ft; show oil, 4,992 ft; cas. set, 4,992 ft; S.R. for 3-in. pipe; T.D., 5,153 ft.

SHERMAN COUNTY

Gibson Oil Co.'s No. 1 Bivins, Sec. 35, Blk. 3-B ... 100,000 ft. gas, 2,016-26 ft; T.D., 3,353 ft; 2,000 ft. S.W., 3,325-33 ft; drlg. by tools, 3,353 ft.
Phillips Pet. Co. and Prairie O. & G. Co.'s No. 1 Price & Fuqua, C NE, Sec. 33, Blk. 2-B, G. H. & H. Sur. ... 100,000 ft. gas, 2,105-10 ft; T.D., 3,420 ft; 2,000,000 ft. gas, 3,325-3,420 ft. lime; 400 ft. wtr. in hole from 3,535 ft.

WHEELER COUNTY

E. L. Arnold's No. 1 M. J. Williams ... Show gas, 1,644 ft; T.D., 1,790 ft; fish. bit; junked hole, 1,780 ft; to abd.
Byrens et al's No. 1 Johnson, SW cor. NE, Sec. 88, Blk. A-5, H. & G. N. Sur. ... S.D., 710 ft.
Clark et al's No. 1 J. W. Gordon ... 5,000,000 ft. gas, 1,768 ft; S.D.
Rook et al's (was Foster et al's) No. 1 S. H. McDonald, SE cor. NW SW, J. N. Lindsay Sur. ... Spudding and shut down.
Hatcher et al's No. 2 J. Hatcher, C NE SW, Sec. 80, Blk. 23, H. & G. N. Sur. ... S.D., 350 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 J. F. Coates, Sec. 93, Blk. 17, H. & G. N. Sur. ... Rig on ground.
Mid-Kansas Oil & Gas Co.'s No. 1 J. L. Newton, Sec. 92, Blk. 17, H. & G. N. Sur. ... Location.
Piney O. & G. Co.'s No. 1 W. S. Walker, Sec. 44, Blk. 24, H. & G. N. Sur. ... S.D., 2,278 ft.
Rook & Angus' No. 1 Smock (Linkey) C SE SE, Sec. 5, Blk. 24, H. & G. N. Sur. ... Rigged up and S.D.
Smith, Brady et al's No. 1 P. J. Sorenson, Sec. 53, Blk. A-4 ... S.D., 2,120 ft. for orders.
The Texas Company's No. 2 Morgan, Sec. 92, Blk. 17. ... Drlg., 1,326 ft.
Vaughan et al's No. 1 M. Ackley ... Location.
Pete Woodley's No. 1 J. Boyle ... S.D., 450 ft.
Kaufold et al's No. 1 E. R. Wallace ... Rig.
Watchorn Oil & Gas Co.'s No. 2 Binkley & Caine, Sec. 92, Blk. 24, H. & G. Sur. ... Rig.

Parkersburg

HAS SERVED THE OIL FIELDS OF THE WORLD FOR THIRTY-ONE YEARS

Aluminum Paint for Steel

PAINT is primarily used for protection—to protect the surface against the elements. To what extent, and how long this protection is assured, depends upon the quality of the paint.

After an exhaustive research Parkersburg standardized on Aluminum Paint. In actual tests, this paint proved to be a better oil field paint, and to give better protection than any other paint. It provides a flake coating of Aluminum Metal together with a coating of paint.

The outstanding advantages of Aluminum Paint are—its ability to minimize evaporation by reflecting the sun's heat, instead of absorbing the heat rays, and the superior protection it offers against corrosion of metal surfaces.

Parkersburg Aluminum Painted All-Steel Derricks, Tanks and other Steel Equipment are protected against the elements by this coat of *Metallic Aluminum*, a protection that adds years to the life of the equipment, lowers derrick depreciation, reduces oil evaporation and checks deterioration.

When you buy Parkersburg Aluminum Painted Steel Equipment, you buy products that are manufactured on a quality basis, and protected by the latest coating process developed for combating rust and corrosion—Aluminum Paint.

Aluminum paint is opaque and has a high reflectivity for light. Because of this the temperature of the paint, and of the material underneath, remains substantially lower than would be the case with other paints.

Parkersburg Products

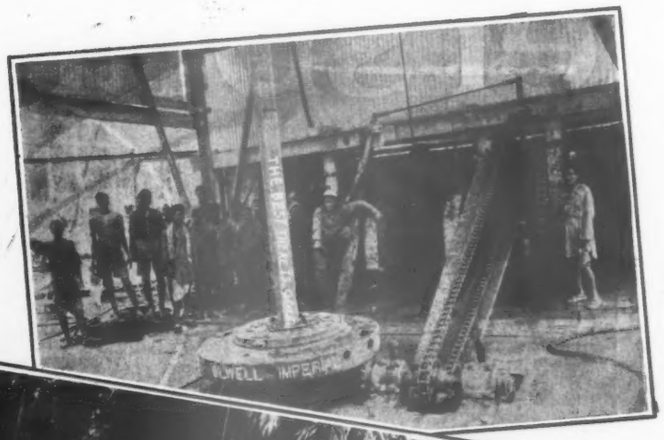
Steel Derricks & Steel Crown Blocks	Rig Irons (A.P.I. Standard)
Chain Driven Sand Reels & Bailing Reels	Portable Drilling Machines (Wood & All-Steel)
Steel Wheels	Bolted Steel Tanks
All-Steel Standard Rigs	Miscellaneous Drilling Equipment

Check the equipment in which you are interested, tear out and return this page, with your name and address, to us, and we will send you complete information on the items checked.

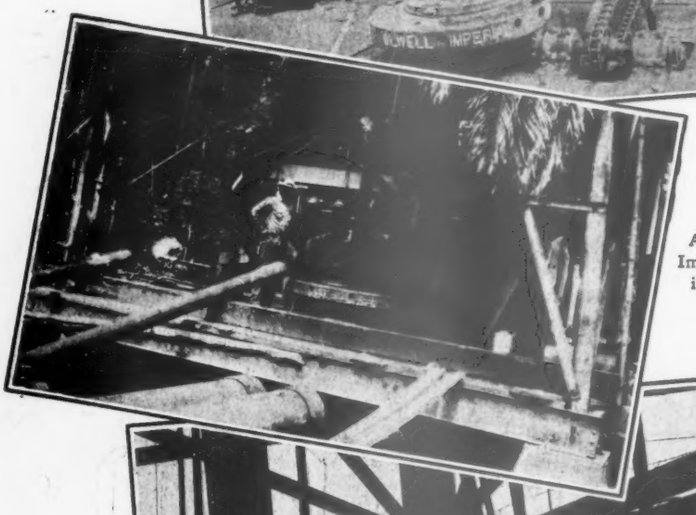
The
PARKERSBURG RIG & REEL COMPANY

Executive Offices & Main Plant, Parkersburg, W. Va., U. S. A.

It Had To Be Good



An "OILWELL" Imperial Rotary in India



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An "OILWELL" Imperial Rotary in Louisiana

An "OILWELL" Imperial Rotary in Texas

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way, performing this work in much less time tha

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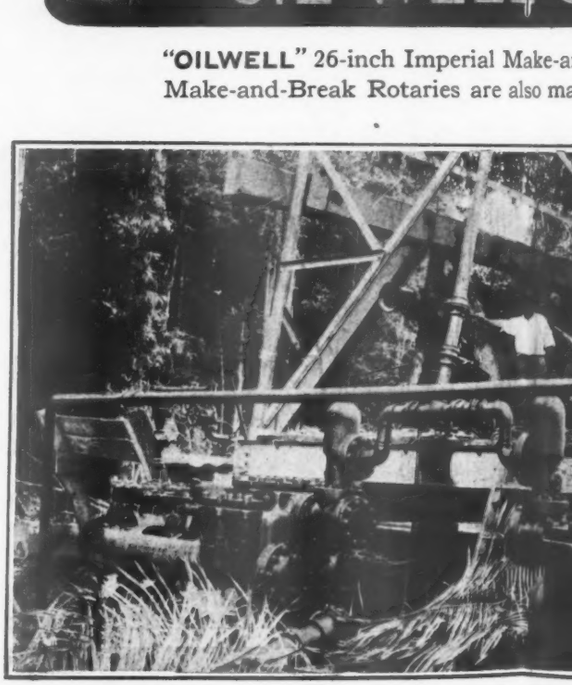

An "OILWELL" Rotary

"OILWELL" ESTD 1862 TRADE MARK (REGISTERED)

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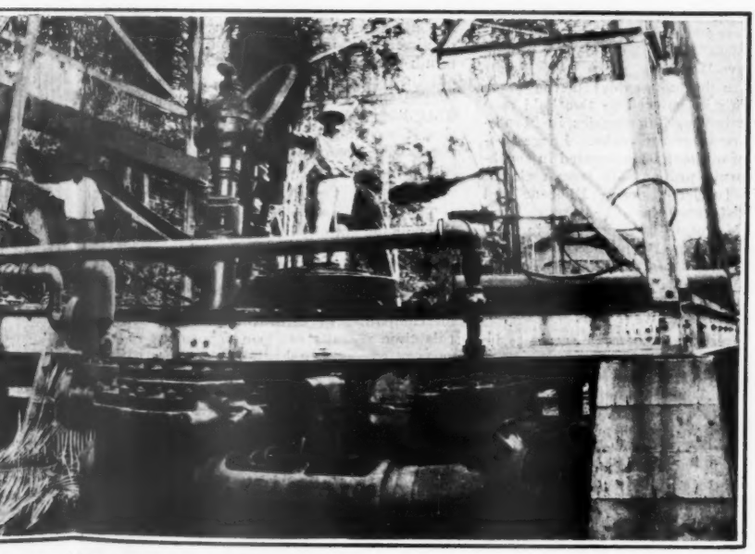
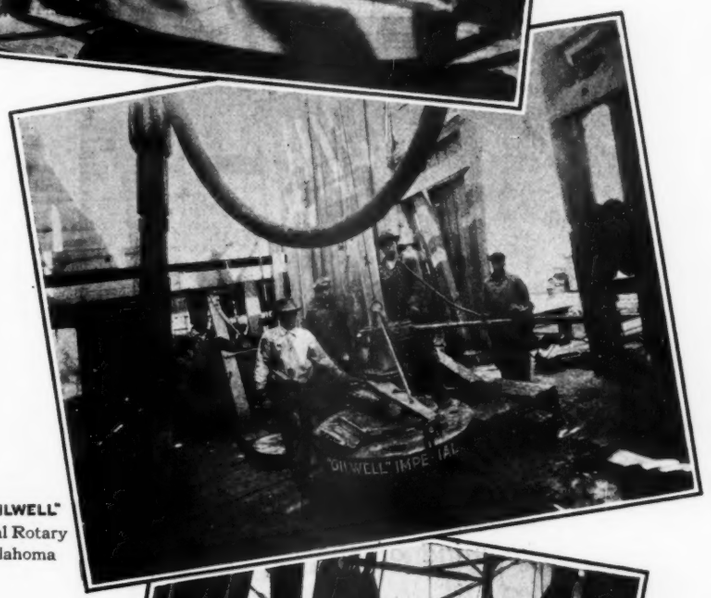
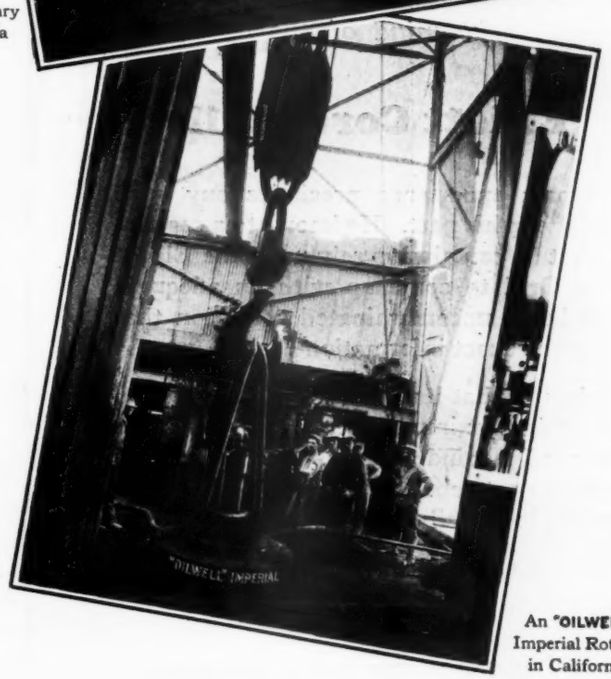


"OILWELL" Rotary Outfit in South America

An "OILWELL" Imperial Rotary in Mexico



An "OILWELL" Imperial Rotary in Oklahoma



An "OILWELL" Imperial Rotary in California

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FIELD EQUIPMENT

BRANCH STORES IN ALL OIL FIELDS

"OILWELL" ESTD. 1862 C O TRADE MARK (REGISTERED)

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This distressing question never enters the mind of the operator using

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His past experience precludes any such anxiety on his part. He knows to a certainty that he can always rely upon the Elliott Core Drill to come up with an adequate core in an uncontaminated condition that gives the exact information desired.

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CALIFORNIA DECLINE IN EARLY SUMMER

(Continued from Page 30)

forth the necessary drilling of reserve areas, and this figure could not be maintained indefinitely. It may nevertheless give some idea of the magnitude of the conservation practiced by California oil companies. The policy followed by the major oil operators of California of keeping enormous reserves in the ground is a major factor in the conserving of our national supply, and one which has so far been too little appreciated.

New Fields

Three new oil fields were discovered in California during 1927, and at least two others are indicated in 1928. Seacliff, Goleta and Round Mountain have actually produced commercial oil. Prospect wells at Potrero and at Union Avenue appear to have made discoveries, but are having the usual troubles of pioneer projects in California. Union Avenue, which is still technically a prospect, appears to be the only area capable of developing into a field of the first magnitude.

The Seacliff Field, sometimes called Rincon, has a discovery well which recently made 1,500 bbls. of light oil in a first sand at 2,800 feet. Sixteen additional wells are now drilling. The area is controlled almost entirely by the larger oil companies, and townlot conditions are absent.

The Seacliff area is 7 miles west of the Ventura Avenue Field. It is another rise on the same general anticline where this anticline runs into the Pacific Ocean. The structurally high point appears to be under the sea. The anticline at Seacliff is faulted and has a restricted drainage area on the landward end, but conditions may improve westward under the sea.

The area at Seacliff (Rincon) seems likely to develop into a field of the second magnitude which will have a moderate influence on California production. It is by no means a second Ventura Avenue. This feature is to be emphasized. If large wells are secured at Seacliff, the oil industry should not become alarmed as to consequences. The adjoining dome at Ventura Avenue is one of the largest and most perfect oil structures in California. The portion of Seacliff available for drilling is, on the other hand, a comparatively small and fractured area of much less importance.

The Goleta light oil field is a minor area in pre-Monterey rocks and is not expected to be noticeable in the state totals. This is believed to also hold true of other miniature discoveries in Monterey and pre-Monterey rocks. Large productions of oil have been secured in southern California proper only from rocks of Fernando (upper Miocene, Pliocene and lower Pleistocene) age.

Round Mountain is a new field in eastern San Joaquin Basin of the faulted monocline type. It seems capable of small productions, but will exert little effect in 1928.

Prospective Fields

The Potrero light oil area seems to be a minor link in the chain of great oil fields along the Newport-Beverly sheer zone in Los Angeles Basin. It is badly faulted at or near its crest, but is theoretically capable of some production. The potentialities while they are not entirely known, are not expected to be important in the 1928 totals.

Union Avenue is still a very important unknown quantity. The prospect well at this locality has indicated that commercial production will eventually be secured, but at what date is problematical. Union Avenue is located in central San Joaquin Basin on an important structural line, and has possibilities of being a field of the first magnitude. Commercial production here would start a new area in California affairs, and would precipitate a drilling and prospecting campaign which might carry California production to record heights in the far future.

Unibn Avenue is a theoretical interval along the Bear Mountain sheer zone, which is in some ways analagous to the famous Newport-Beverly sheer zone of Los Angeles Basin. Success or failure along this newly-discovered zone is one of the most important factors in the future trend of California production. Success here in the near future may mean a major upward trend in 1929.

Several other areas of considerable interest are now being prospected in California, but the tests in these areas have not proceeded far enough to warrant specific mention. A general prospecting campaign is at present starting in San Joaquin Basin. Many of the wildcat wells are being located without reference to the geologic probabilities and can be eliminated from the picture, but a number of others are situated in favorable territory and may open up one or more new fields in 1928.

Shutin Production

The shutin production of California is shown upon the accompanying graph. It is estimated by the present writer to total approximately 69,000 bbls. as of December 24, 1927. This figure is perhaps lower than that arrived at in some other estimates, for the writer has taken into consideration the normal decline of the wells in some areas. The total has been divided, as shown, into 14,000 bbls. of light and 55,000 bbls. of heavy oils. Approximately 4,000 bbls. of semilight oils have been placed in the heavy oil column.

The question of further shutins, or vice versa, is an irksome one. The national outlook will exert a big influence, but there are other factors. The major oil companies of California showed such splendid and unexcelled co-operation for the good of the industry during the local crisis in 1927 that a like policy may be expected in 1928. On the other hand, a large part of the production owned in fee is already shut in, and further shutins of material amount will almost certainly occasion considerable sacrifice.

Long Beach must apparently run its course, for it is a town lot area. Ventura Avenue could be pared down if necessary, for at least one large company needing the oil now being produced there will shortly increase its supply from another field. Shutins of smaller amount might be made elsewhere at a sacrifice.

If a brake on production should be deemed necessary in 1928, the writer believes that this can best be effected by a further restriction of drilling in controlled areas. Such a procedure must be planned carefully in order to be just, for it is not always equitable. Some companies require a certain amount of oils to maintain refining obligations, and others are not in a financial position to drastically curtail their cheapest source of supplies. This discussion is, of course, only reflective, for stringent curtailment does not seem to be needed just now, and may not become necessary.

Conservation

The writer would call attention to the tremendous stabilizing influence being exerted by California on national production. Town lot fields which have held the limelight during the past few years have obscured the fact that the major oil companies of California have during this time steadily set aside enormous reserves of oil, splendidly engineered, against the time when future needs of the nation would warrant taking these from the earth. It is an unheralded fact that, during the past five years while the public has had plenty of gasoline at absurdly low prices, California oil companies have conserved in the ground almost 200,000 bbls. of oil daily against a future need, for this amount could have been added to the daily totals by cutthroat drilling and the developing of holdings for temporary advantage.

The day of town lot drilling in California is almost over. It has been confined almost in its entirety to the highly subdivided Los Angeles Basin. Two or three sporadic outbreaks may yet occur, but that is all. It has not been an unmixed evil, for it forced the setting aside of large reserve acreage. The undrilled proven reserves of one California oil company are estimated to exceed 150,000,000 bbls. Those of three other companies average perhaps 100,000,000 bbls. each.

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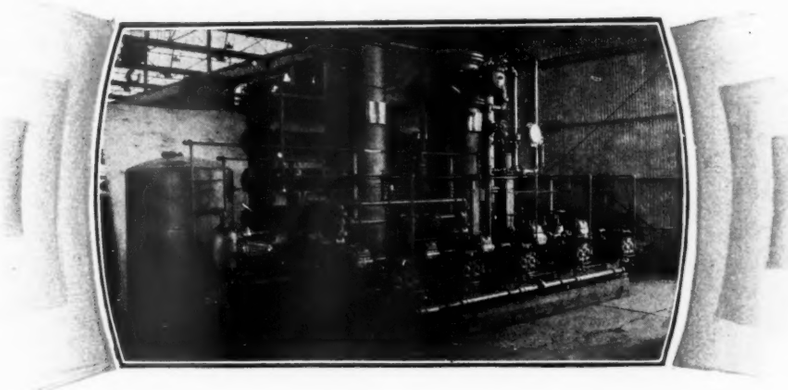

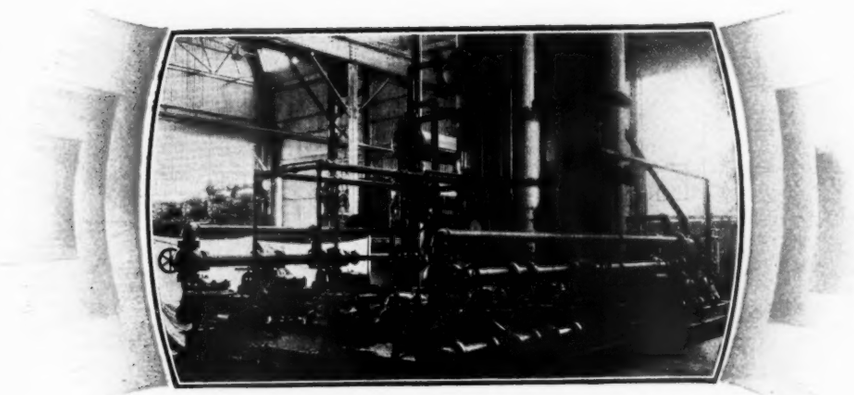

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These figures are exclusive of the large resources now being drawn upon.

Certain California companies appear to have an intrinsic value greater than current market quotations would indicate. It should also be stated, however, that the resources of other companies do not seem to warrant any marked increase in valuation. The investing public would do well to be careful of accepting unfounded rumors regarding mergers. At least one of those which occasioned large financial losses on eastern stock exchanges was obviously absurd to those who are at all conversant with California conditions.

California is a gigantic storehouse, a large part of whose contents are hidden and unappraised. One-third of its acreage geologically favorable for the occurrence of oil is today untested. The proven reserves have been accurately estimated many times in the past dozen years, but new discoveries have caused these estimates to be outgrown almost as fast as they were made. This latter feature is not, of course, monopolized by California, for recent discoveries in Texas and Oklahoma have made inadequate the former estimates for those areas. Even the estimate of the national supply carefully made by the American Petroleum Institute but a few years ago is now known to have been extremely conservative.

Summary

California is at this writing producing 620,000 bbls. daily, with approximately 70,000 bbls. of additional production shut in. Providing no additional oils are shut in, production is expected to increase to a peak in the neighborhood of 680,000 bbls. daily in April or soon thereafter. It will then theoretically enter a rather slow decline. This outlook may be modified by matters of drilling policy, depending on the national situation.

Production during the last half of 1928 is difficult to estimate owing to the unknown factor of new fields and drilling programs. The anticipated summer decline may continue throughout 1928, or it may be stopped late in the year. In any case, no record output is expected before 1929.

California production will increase during the next four or five months, but this may be discounted as seemingly temporary. Considering the normal increase in consumption, the local situation is expected, on the whole, to show an improvement over last year. If the Mid-Continent can be held in check, the oil industry is on the threshold of better times.

OFFERS A PLAN FOR FEDERAL CO-OPERATION

(Continued from Page 33)

sumption until economic conditions again warrant competitive production of petroleum. Such a board should be made up of at least two experts from the American Petroleum Institute, two experts from the oil section of the United States Geological Survey, and a representative of the public drawn from one of the schools of industrial economics. It would be necessary to supply funds for the purpose of employing engineers to secure production and consumption data. The final findings of the board would be submitted to the President for consideration, and the President vested with authority to set the time for the commencement of the drilling and producing moratorium.

We are not without precedent for such a commission, working with industry, without regulatory powers or delegated restrictive powers. The United States Tariff Commission's function is to aid Congress in all matters relating to tariff legislation by supplying accurate and reliable information regarding tariff conditions. The essential function of the United States Oil Conservation Board should, similarly, be to aid the industry in all matters relating to economic and scientific production of crude oil for the purpose of preventing economic or actual waste, and to stabilize supply and consumption within the United States by competitive or co-operative drilling and production through presidential sanction, as necessity indicates. The powers granted to the Oil Conservation Board should be remedial in principle and effect and only exercised in furtherance of economic and industrial stability. The Federal Oil Conservation Board should be expressly limited to fact finding and to investigation with power of recommendation to the President for direct application of the moratorium.

Only Legislative Action Needed

The only legislative action needed is for Congress to legalize periodic agreements between operators so that such agreements will not run afoul of the anti-trust laws and/or subject the operators to loss by cancellation of leasehold rights under the oil and gas lease terms and judicial interpretations thereof.

Any proposed legislation which does not protect the producers from prosecution under the Sherman Law and from danger of oil and gas lease cancellation is only a makeshift and should be shunned by the industry as a trouble breeder.

The oil producers' fear of legislation arises out of the past history of legislation as it has been aimed at the oil industry. If oil men did not scent danger in so-called legislative aids they should be classed as morons; even a two-year-old baby once burned keeps away from fire. Therefore, there is all the more need for careful and thorough consideration of this subject before any action is taken, and, as I said in The Oil and Gas Journal of December 1, I say again:

"The President should be given authority, upon the recommendation and request of the oil conservation board, to suspend the mandate of the Sherman Law requiring competition in oil production, so as to permit agreements in curtailment of drilling and production when the national supply exceeds the demand sufficiently to cause economic waste and unwarranted depletion of the petroleum reserves. . . . Conservation and unlimited competition in oil production are diametrically opposed. There will be over-competition and overproduction until nature's supply is prematurely exhausted unless there is relaxation of the Sherman Law's mandate forcing unlimited competition applying to oil production. Conservation depends upon co-operation; co-operation depends upon Congress. An unsound economic condition can be remedied only by the removal of the cause."

REVIEW OF INTEREST IN WESTERN KANSAS

(Continued from Page 31)

in the Stapleton oil zone 2,500 feet lower shows a closure of approximately 130 feet.

The anticlines and domes present in western Kansas are believed to lie in the Mid-Continent structural province, where slight closures or even noses and structural terraces are sufficient to trap the oil. It is believed that holes in this area drilled to a depth of 4,000 feet would penetrate 1,000 feet into the Pennsylvanian in practically all of the structures in case oil was not found at shallower depths.

The Southwestern Lease Play

The play in the southwestern part of the state was originated by the finding of gas in the Liberal district of Seward County, several years ago. When the Oklahoma Panhandle and the Texas Panhandle came into producing prominence, this part of southwest Kansas was again brought into notice, as it was the contention of numerous geologists that it possessed the same geological conditions which were found in the regions mentioned. Checkerboarding by some of the larger companies followed. Although several test wells have been drilled in this territory, no commercial oil wells have been found.

The diagonal lines on the map accompanying this story show as nearly as possible, the present limits of the play in both of the regions mentioned.

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SHELL PIPE LINE IS RENEWING ITS YOUTH

(Continued from Page 34)

men, but if a person essays to make a comparison between the machine and hand workmen in point of amount of work accomplished he finds himself reeling among figures that look too grotesque to be true, but which as a matter of fact perhaps do not convey the whole truth.

Suppose we go at it this way: As already noted, each of the cutter heads contains four spindles, each bearing 23 cutters, making 92 cutters altogether. Each cutter has 24 teeth, a total of 2,208 teeth. Thus a machine with two cutter heads, like the one now sauntering from Yale to St. Louis, has 4,416 teeth.

Now unless a pair of fairly observant eyes, fitted with a recently purchased pair of nice bifocal glasses, have grossly deceived their owner, each one of those 4,416 teeth is capable of doing—yes, by George, actually does—the work of at least two men. If one of those teeth did less than that it would feel that it had loafed on the job and its conscience would smart when evening shadows marked the end of a day. Don't lose sight of the fact that each cutter makes 160 revolutions a minute, each of its 24 teeth delivers 160 blows in that time.

The cleaner and the stiff-legged boom used in lifting the pipe to permit moving the skids on which the pipe rests.

Therefore two men to equal the performance of one tooth (we're considering only the number of blows struck now, and not quality of work) would have to deliver 80 blows a minute each with a cold chisel.

Produce if you can any living man, strong of arm and stout of heart though he be, who will undertake to keep a cold chisel tap-tap-tapping on that pipe at the rate of 80 taps a minute without letup. And that's what he, with another like him, would have to do to get into the same class with one of those 4,416 teeth.

Where does this bring us? Why, holy cats, unless the good old multiplication table has gone clean loco and if you admit that one of these teeth does the work of two men, it would take an army of 8,832 men to do what that queer-looking contraption does as it grinds its way eastward.

But does it really do that? Oh, figure it out for yourself.

And imagine, if you can, any man who leaves a trail of cigar ashes on the living-room rug and drops most of his breakfast egg on his vest doing as neat and thorough a job of dirt removal as that machine does. You can't? Well, nobody supposed you could.

Welding Crew, Too

Notwithstanding the extreme care with which the pipe is handled, breaks occur now and then. Sometimes they are mere cracks. Occasionally a joint of pipe that has suffered unusually severe damage from subsurface conditions will break wide open. A welding crew is ready to make repairs in all such cases. The pipe line is being used right along during the cleaning operation, carrying its usual load of oil. When a break occurs a telephone message to the nearest pumping station shuts off the flow until the break is repaired.

Like other pipe laid 10 years ago, this line has collar couplings. These present no difficulty to the cleaning machine, which is so devised that it handles other couplings also.

A portable camp is operated to take care of the colony of workmen. Tents provide sleeping quarters, dining room and cookhouse. The work of the camp is performed by a cook, a helper and a "crumb boss," who makes up the cots and does the general cleaning up about the premises. Hot breakfasts in the morning and dinners in the evening are eaten in the camp. The cook and his helper pack lunches for the men to eat at noon. To keep within easy distance of all the working crews the camp moves about once a week.

The reconditioning project is under the supervision of A. K. Riddle, general superintendent of the Shell Pipe Line Co., with headquarters in Cushing. Jack Vertrees is field foreman. The work is visited occasionally by C. S. Campbell, assistant to the president of the W-K-M Co. and head of the pipe-cleaning machine department, and R. J. Scott, engineer for the Hercules Motors Corp., who see that their mechanical pets are behaving themselves.

SPAIN PROMISES PAY FOR PROPERTY TAKEN

WASHINGTON, D. C., Dec. 31.—Assurance of the Spanish Premier and Minister of Finance that property of the Standard Oil Co. of New Jersey in Spain recently taken over under the Spanish oil monopoly decree would be properly paid for when a valuation was completed have been transmitted to the State Department by the embassy at Madrid.

A message from the American charge said that both officials had assured him that the Madrid government proposed "to deal generously with expropriated interests."

The Standard Oil Co. owns plants at Alicante and Valencia. These were taken over under the decree of last June and awarded to a group of Spanish bankers for operation under government auspices. A plant at Malaga, also largely American owned, has been similarly expropriated.

A protest against taking over of American property in Spain on behalf of the Spanish oil monopoly is reported to have been lodged with General Primo de Rivera by American Charge D'Affairs Percy Blair, Madrid dispatches to the Franco-Spanish border said. Blair, who is stationed in Madrid, explained that the United States intends to do its utmost toward protecting the interests of its citizens. French and British governments have lodged similar protests, the dispatches said.

HAZARD WIRE LINES

MR. J. E. WILLOUGHBY (in oval), *Production Supt., Texan Oil and Land Co.*

At left, *W. H. CLIFTON, Driller. L. H. LUNSFORD, Tool Dresser.*

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Hazard 7/8" Drilling Line used on No. 1-B Well, drilled by the Texan Oil and Land Co. in constant use 100 days when these photos were taken. The total depth of hole was 6582 feet, straight reaming 5975 feet.

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ROCKY MOUNTAIN AREA

(Continued from Page 53)

recovered bit lost at 3,787 feet, and has resumed drilling.

Montana

Heavy snows and blizzards, accompanied by intense cold has shut down practically all field work in Montana as the year closes. In the Sunburst Field, several leases are shut down altogether on account of the freezing of lead lines from the wells and water lines. This is the first time in several years that the pumping wells had to stop for cold. The oil becomes mushy with the intense cold and cannot be pumped through the lead lines to the tanks.

Plans for the coming year, however, consider much more activity in the field than during 1927. Announcement has been made that the Genou Oil & Gas Co. will drill three new wells as offsets to its discovery well in the Bannatyne Field. The Texas Pacific Coal & Oil Co., the Big West Oil Co., Montana Pacific Oil Co., and the Ferdig Syndicate will drill one well each in the same field.

In the Sunburst Field, the Hannah-Porter Haire well that was making 600 bbls. last week, has suddenly started to decline and is now making 250 bbls. daily. Just why this well is so freakish in its production cannot be described by any theory.

In the same field, the Co-Operative Producers, drilling on Section 12-34-2, found a showing in the Ellis sand that will make a small pumper naturally. However, the company is drilling on down and will make a test of the lime before plugging back and shooting the Ellis sand.

The big well of the Dakota-Montana Oil Co. that came in at 1,500 bbls. daily is still making 500 bbls. and has not fallen off as do most of the big gushers in the field, after a few weeks. This well is on Section 7-34-1, and the field workers are claiming it is taking its oil from a new pool in that vicinity which has not been touched by other wells and thus is able to hold up its production.

The Diamond T. Oil Co. had to shut down its drilling well on Section 7-34-1, which is to be an offset to the Dakota-Montana big well, but drilling will start as soon as the weather moderates again.

Water Well to Oil

The well located on Section 9-34-1, drilled by the Barnhill & Baker interests and which has been used for a water well for over a year, gave the Sunburst Field a shock last week when it started making oil and is now doing about 150 bbls. This well never had a show of oil when it was drilled into the sand, but the flow of water was sufficient to make the owners tube and save it as a source of water supply. This is taken to indicate that the water in the Ellis sand in Sunburst may be exhausted and a rush is expected for leases in the central part of the field that were abandoned because of water showings in the wells drilled.

The Oil Producing Corp., drilled on Section 18-34-1, reached the Ellis sand and has a producer, but on account of bad weather the well has not been tested. This well is also located in the same area as the Dakota-Montana gusher and the freak water and oil well of the Barnhill and Baker people.

A wildcat is drilling near Ray, N. Dak., and has reached a depth of 275 feet. The well is thought to have reached the Fort Union formation at this depth and this would mean that it would be possible to drill through the Cretaceous formations and find the Carboniferous.

ROCKY MOUNTAIN PRODUCTION
Runs From the Field

Wyoming	
Salt Creek	38,940
Teapot	.....
Big Muddy	2,720
Grass Creek	2,490
Elk Basin	880
Greybull	20
Dutton Creek	10
Notches	.....
Rock River	2,570
Rex Lake	.....
Lance Creek	580
LaBarge	630
Mule Creek	710
Poison Spider	140
Hamilton	610
Osage	390
Lander	890
Pilot Butte	.....
Ferris	50
Byron	40
Lost Soldier	2,680
Simpson Ridge	80
Total Wyoming	54,430
Montana	
Cat Creek	1,840
Lake Basin	170
Kevin-Sunburst	9,500
Total Montana	11,510
Colorado	
Florence	940
Moffat	1,220
Fort Collins	3,150
Walden	.....
Iles Dome	1,340
Rangely	100
Tow Creek	450
Boulder	25
Total Colorado	7,225
New Mexico	
Rattlesnake	86
Hogback	550
Cap Rock	106
Table Mesa	340
Artesia	1,450
Total New Mexico	2,532
Total Rocky Mountain	75,697

REFINERY OPERATIONS IN WESTERN TEXAS

(Continued from Page 29)

which also have large surpluses in their refinery operations and the Middle West is the closest consuming area which has to look to other sections for the bulk of its requirements in gasoline and other refined products.

May Lower Differentials

Rate making whenever a new refining area is opened up, generally requires a long period of adjustment before the structure is finally satisfactory to all concerned granting that the latter end is ever obtained in the oil industry. The rates no doubt will be materially changed through the efforts of the companies who own the plants now in operation in West Texas. The Col-Tex Refining Co. is endeavoring to be placed in the Ranger group in regard to rates to middle western points. At present the Colorado refinery must absorb a differential of 5 cents to western trunk line points in the Middle West. The Interstate Commerce Commission has indicated in a previous decision, involving Mid-Continent rates, that the Colorado refinery was entitled to rates on a parity with the Ranger group. The Ranger group has a differential of 4 cents over Group 3. A hearing in regard to the Col-Tex company's petition will be held at Washington, January 9.

Based on past actions, it is likely that the interested railroads will see fit to lower the present differentials of the West Texas refineries in their interstate shipments. It seems reasonable to assume, however, that due to the rail distances involved that they will always be compelled to absorb a differential of from 2½ to 5 cents over their Mid-Continent competitors in shipments to the North and East.

Export rates to the South have not as yet been seriously considered for the reason that the West Texas refineries now in operation have not attempted to make the export grades of gasoline and kerosene. This is due to the difficulty in refining the crudes so to meet the export specifications.

If this export material ever becomes available in large quantities it is probable that the railroads will give the refiners a rate the same as that in effect from the North and Central Texas group of refineries. However, in this export business they will have the same handicap as other Mid-Continent refinery groups. They will compete with the major refineries located along the Gulf Coast who obtain their crude supplies by pipe line and water transportation. This transportation situation has greatly limited the export outlet for inland refineries.

Texas Market

In this connection a general situation of importance both in interstate and intrastate shipments to refiners who contemplate locating plants in West Texas should receive consideration. This has to do with the fact that Texas refineries already are producing more of all refined products than the Texas market will absorb. For example, according to the October report (latest available) of the Bureau of Mines, the gasoline output of Texas refineries totaled 254,688,000 gallons during that month. The consumption in the State for the mouth totaled 53,660,000 gallons based on reports made in connection with the collection of the State's gasoline tax. This shows that the State at present is producing approximately five times as much gasoline as it is consuming.

The bulk of this output (79 per cent) comes from the refineries located along the coast which distribute their products both in domestic and foreign markets. A study of the refining situation will show that the remaining refineries are scattered so that outside of West Texas no consuming point is far distant from a refinery source of supply. The latest addition to the refining industry in that State was the Panhandle group. Four operating refineries in and near Amarillo furnish more gasoline and other products than is consumed in that area.

Local Consumption

In regard to West Texas it is well to remember that the area is one of the most sparsely settled sections in the United States, with a correspondingly limited market for refined products. A check made of 22 of these West Texas counties showed that in 1920 they had a combined population less than 200,000. These 22 counties covered an area approximately 225 miles square or equal in size to New York or Iowa. Crane County, according to 1920 census had a population of 37, Upton 253, Pecos 3,857, and Mitchell 7,527.

Allowing for a large increase in population since 1920, these 22 West Texas counties at present would not consume more than 80,000 gallons of gasoline daily. Thus a 5,000-bbl. refinery making 40 per cent gasoline or a 10,000-bbl. refinery making 20 per cent would be adequate to take care of what might be termed the "local consumption." Outside of that area the refiners will come in direct competition with other Texas refineries. The intrastate rate structure of Texas as regulated by the Texas Railroad Commission is in some respects unique and limits the advantage which a refinery may have in local business. The rates on refined oils are based on a graduated mileage scale up to 120 miles. For longer distances certain differentials are in effect which largely nullify any advantage which a refinery may have in mileage in excess of the 120 miles. Thus a refiner shipping 150 miles has the same rate as a competitor who had to move his gasoline 300 or 400 miles to get to the same consuming point.

The market for refined products other than gasoline in West Texas is not large. The railroads and local industries in the past have furnished an outlet for large quantities of fuel oil, although there have been indications recently that the present supply exceeded the demand. Cotton gins, public utilities, and irrigation projects also have consumed large quantities of the heavier fuel oils. Coal and gas do not offer serious competition to fuel oil over the greater part of West Texas. If low prices materialize it will be entirely due to the cut price competition of refinery organizations.

The eastern part of old Mexico is also furnishing an outlet for the West Texas refiners. This business is small at present and undesirable in many respects.

Crude Oil Rates

Considerable quantities of crude oil are moving out of West Texas points by tank car to Texas refineries and those located outside the state. Due to the low prices in effect for the West Texas crudes a few refiners have been able to absorb the relatively high freight rates and still operate more profitable than they could with a crude oil supply located nearer their plants with higher posted prices at the wells.

As in the case of refined products there is still considerable confusion as the tariffs on crude oil shipments. Some of the railroads have quoted refiners the same rate as is in effect for fuel oil and gas shipments. Other railroads have seen fit to give special rates on crude oil shipments.

Winkler County crude oil is being transported by pipe line to points on the Texas & Pacific Railroad. The rail rate from these points to Kansas City is 29 cents per 100 pounds (90 cents per barrel); 31 cents (96 cents per barrel) to St. Louis and Wood River and 37 cents ($1.15) to Chicago (including Whiting and East Chicago). The New Orleans rate is 24 cents (75 cents per barrel). The rate to Shreveport is 20 cents (62 cents per barrel).

Some points on the Orient have 18 and 20-cent rates to Texas gulf points for export or coastwise movement. This rail rate of 56 to 62 cents per barrel contrasts with a 40-cent pipe line rate from the same area to Texas gulf points. There is as yet no direct pipe line connection from the West Texas fields to lines leading to middle western refineries.

CORROSION IS COSTLY WEST TEXAS PROBLEM

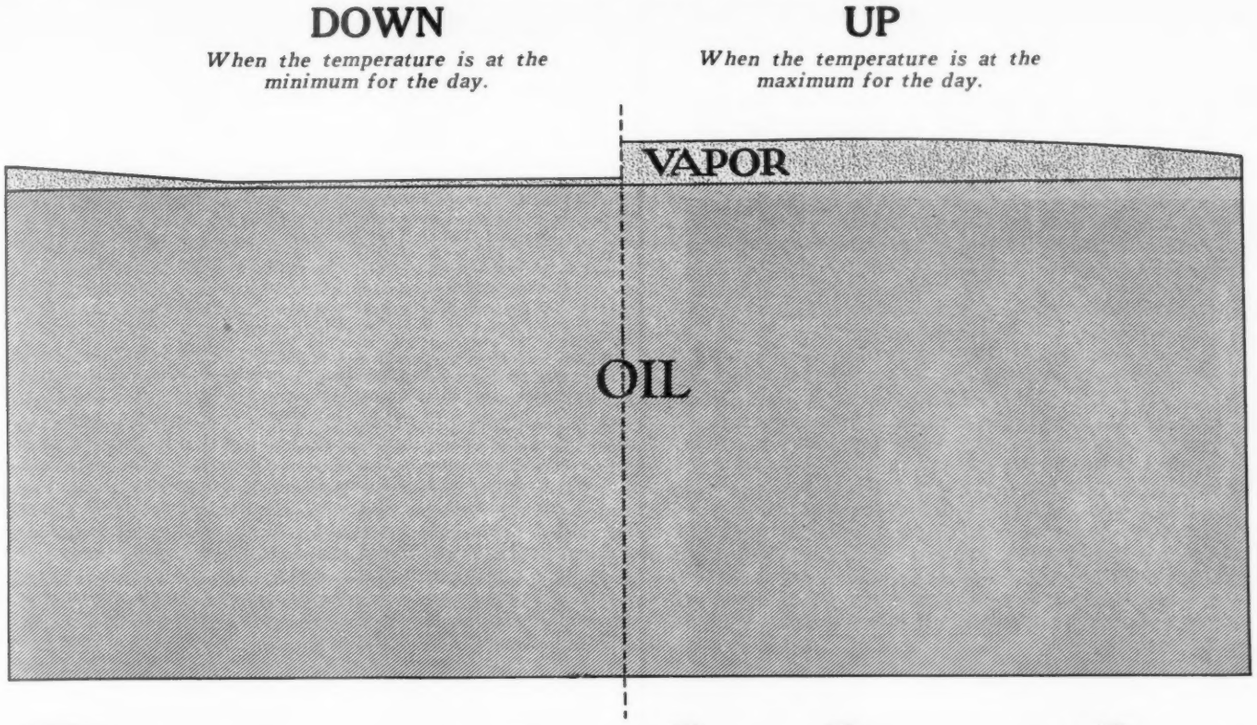
(Continued from Page 32)

appearing to be mainly iron oxide, as only a trace of iron sulphide could be detected. Undoubtedly the major portion of this scale consists of iron sulphide at the time of its formation, the iron sulphide being immediately oxidized to iron oxide. The corrosion was not uniform but appeared to be greatest directly above the outlet of the gas line used for agitation purposes. The appearance of the scale showed that its formation was due to the condensation of water on the roof, as a large part of the scale consisted of hollow, inverted cones with the lower ends open, similar to the appearance of a mud-wasp's nest. These cones show that the water condensing on the roof in drops, begins its corrosive action, the water finally dropping off or drying out, leaving the products of corrosion behind in a hollow shell. Increased corrosion would naturally result, as observed, directly above the outlet of the gas, as the deposition of water would be the greatest at this point. In addition, the water would have a better opportunity to absorb hydrogen sulphide from the gas due to the continual renewal of the gas at this point.

"The corrosion on the sides increased from the top to within 6 or 8 inches off bottom. The walls showed extensive pitting, these pits having penetrated through in some places. The corrosion on the sides appeared to be the greatest where the oil received the most violent agitation, as indicated by the position of the gas agitation line. Corrosion also appeared to be more extensive at all places where the continuity of the surface was broken, particularly at the places where the side sheets were bolted together. This is caused by the increased surging at these irregular places. Below the pipe line connection there appears to be very little corrosion, only a few pits being found. This portion of the tank is never emptied of fluid, consequently the air has no access to it.

"The bottom of the tank is in excellent condition, no corrosion or pitting being discernible. The condition of the bottom and lower part of the sides would indicate that air is essential for extreme corrosion to take place, as this uncorroded part of the tank was never in contact with air after once being placed in service. The bottom also appeared to be protected by the deposition of silt from the oil and from the insoluble calcium and magnesium soaps resulting from the reaction between the bottom salt water and the Tret-O-Lite used in treatment.

"Undoubtedly both sulphur and electrolytic corrosion took place in this tank, as well as the ordinary rusting due to air and moisture. Iron sulphide, formed by the action of the hydrogen sulphide water on iron, will set up electrolytic corrosion when in contact with the unattacked iron. Corrosion also appears to be proportional to the amount of agitation or surging undergone by the fluid, and also to the irregularity of the containing surfaces as this irregularity will increase surging.

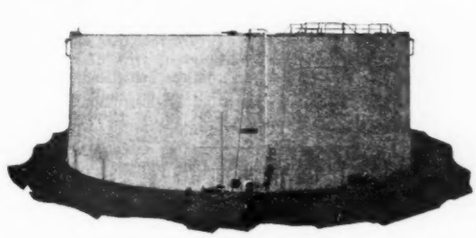


Do your tanks breathe up *and* down *or* in *and* out?

THE vapor under a Wiggins Breather Roof expands and contracts with changing temperature just as the vapor in any other tank. But in this case instead of producing an in and out breathe, the result is merely an up and down movement of the roof.

In and out breathing means a tremendous loss of the most volatile fractions in your oil. This tax imposed by nature is far greater than all those imposed by men. But it can readily be evaded by equipping your standing storage tanks with Wiggins Breather Roofs.

The up and down breathing of these roofs goes on day after day with no vapor loss. When the temperature is at its daily minimum the roof dips slightly below the top angle of the tank and rests on the roof framing. As the vapor begins to expand with rising temperature the roof is lifted by the increasing vapor volume and this lift continues until the roof is domed upward, riding entirely on the vapor except for its support around the tank rim.



This variation in vapor space is ample to provide for the changing volume of vapor when the outage is small as it normally is for standing storage tanks. The volume relief valve and the vacuum relief valve protect the roof during filling and emptying and permit the slight adjustments necessary when the daily temperature is changing greatly with the advancing seasons.

This roof is now in service in a number of locations and has been given rigid tests by prominent oil companies. It has proven a worthy companion of the Wiggins Floating Roof widely recognized as the ideal evaporation protection for oil in working tanks. Full details of either of these roofs will be gladly sent on request.

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(Your supply jobber has RIGID Wrenches. Ask him to show them to you and to explain their unconditionally guaranteed housing, your protection against housing breakage and distortion.)

The Ridge Tool Co. Dept. O, Elyria, O.

RIGID

PIPE WRENCHES
VISES AND PIPE CUTTERS
WRENCHES

IDEAL DISTILLATION UNIT IN REFINING

(Continued from Page 64)

On the basis of 86 pounds of coal actually burned, the heat efficiency becomes 66 per cent and the stack losses 24.5 per cent. A comparison of these figures with the 75 per cent efficiency and the 16.7 per cent stack losses obtained in the furnace burning pulverized coal shows the effect not of the fuel, but of the increased "radiant" surface in the latter, which had been raised from 5 per cent to 16 per cent of the total. In the first furnace with a single row of roof tubes, 30 per cent of the heat was absorbed in 5 per cent, in the second with two rows 53 per cent was absorbed in 16 per cent of the heating surface. Moreover, the total comparative surface required to absorb a given amount of heat had been dropped from 100 to 70. The diminution in the amount of excess air and the consequent increase in furnace temperature has resulted in some increase of coke formation inside and more corrosion outside the tubes, necessitating examination and cleaning every four weeks instead of from six to eight. The drop in time efficiency is negligible compared with the increased capacity.

Table 2—Pipe Still Furnace
Heat Balance
Heating 5,000 bbls. M. C. Crude from 350-797 degrees Fahrenheit.

	Per Cent
Loss due to moisture in fuel	0.18
Loss due to hydrogen in fuel	4.20
Loss due to dry flue gas	16.85
Loss due to carbon in ash	0.06
*Loss due to atomizing steam	0.40
Radiation & unaccounted (calculated from surface area and temperature)	3.50
Total losses	25.19
Input to oil and steam	74.81

*Steam used to protect oil burners.

Table 3—Comparison of Heat Balance
Pipe Still vs. Boilers

	Shell Still hand fired No. 2 Buck	No. 3 Buckwheat Stoker fired Boiler	No. 3 Buckwheat Stoker fired Pipe Still	Fuel Oil Boiler	Fuel Oil Pipe Still	Bituminous Coal Boiler Stoker fired	Bituminous Coal Pipe Still Pulverized Coal
Total surface in Radiant heat zone in per cent total surface	50.0	20.0	5.5	20.0	16.0	20.0	16.0
B.t.u. absorbed per hour: per sq. ft. Radiant surface		13,000	11,500	13,000	9,800	13,000	9,800
per sq. ft. convection surface		3,500	1,530	3,500	1,680	3,500	1,680
per sq. ft. total surface		5,400	2,080	5,400	2,980	5,400	2,980
Heat Balance: Per cent heat absorbed	32.0	72.5	56.5	81.0	76.2	75.0	75.0
Loss to Moisture and hydrogen in fuel	4.0	4.0	4.5	7.0	7.1	5.7	4.7
Dry stack loss	36.0	10.9	21.0	9.0	13.2	9.8	16.7
Ash pit loss	12.0	9.1	14.0	0.0	0.0	6.5	0.1
Radiation, etc.	16.0	3.5	4.0	3.0	3.5	3.0	3.5

The projected area of the single row of roof tubes, which in that case may be considered the effective area, is about one-third the total; the radiant heat input per square foot of this effective area is 35,000 B.t.u. per hour. In the second furnace, although the total surface has been doubled, the shadowing of the top row has cut down the effective area to one-half of the former figure. It may be predicted with some assurance that future furnaces will be designed from the point of view of maximum absorption of radiant heat, and that while the heat efficiency may not be greatly increased, the cost of the equipment will be materially reduced.

Tube Arrangement

The question of the relative merits of a "two pass" and a "one pass" tube arrangement requires consideration. The merits of the single passage are obvious enough, and the objection equally so. The furnace pressure drop varies, of course, with the throughput and to a surprising extent with the volatility of the charge (see Figure 2). The heat exchanger through which the crude passes just before entering the furnace may be subjected to temperatures as high as 750 degrees and pressures of some 200 pounds. The higher the pressure the greater is the cost of the exchanger equipment, and the possibility and extent of contamination of products with charge.

The limitation thus imposed upon capacity may be removed to some extent by the substitution of the right angle with smooth flow return bends. Some preliminary readings (see Figure 3) indicate that at a 5,400-bbl. rate, the decrease would be about 20 per cent and occur mainly in the cooler part of the furnace.

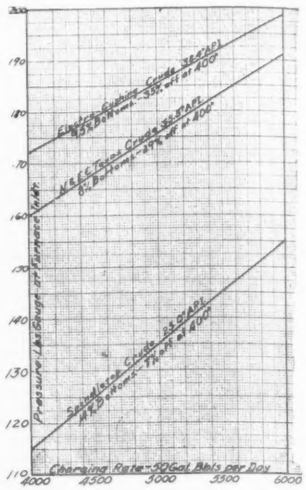

Figure 2—Oil pressure at furnace inlet vs. rate for outlet temperature at 800 degrees Fahrenheit.

The one pass furnace limits the maximum practical capacity; the twin pass doubles capacity for equal pressure drops, but because of uncertainty in division of the stream increases the danger of coking, since both passes are subjected to not widely differing heat conditions.

As a matter of actual experience, it appears that the difficulty of maintaining the same outlet temperature on both passes increases as the pressure drop decreases, and also as the average volatility decreases. It is almost always necessary to throttle one pass and at low inlet pressures both must be throttled. The question of safe velocity in the tubes, from a coking standpoint, has sometimes been discussed in terms of turbulent liquid flow. Such flow in this type of distillation occurs only in regions of safe temperature.

It rather appears reasonable that serious coking will not occur when the vapor velocity is sufficient to keep the liquid suspended in the vapor stream and traveling at the same speed, and conversely that the liquid may coke if it drops out and flows comparatively slowly along the tube surface. Serious coking troubles from uneven division have occurred in attempting to run at 800 degrees Mid-Continent crude, from which the naphtha, kerosene and some gas oil had been removed. Pressed wax distillate run at 730 degrees gave a comparatively low inlet pressure and showed an alarming tendency to distribute unevenly, the temperature lines for the two outlets actually crossing and recrossing. Throttling the inlets on both passes corrected the condition and avoided coking.

Limitations of Two Pass

The two pass furnace may then be limited in its ability to handle crudes requiring high temperature for the desired overheat separation and containing relatively large amounts of liquid not volatile at the temperature. One might prefer, e.g., not to attempt the separation of paving asphalt from heavy Mexican crude at 780 degrees in a two pass, al-

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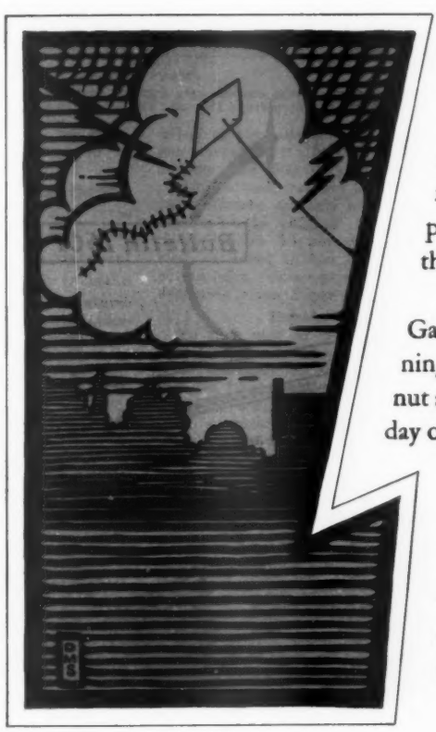

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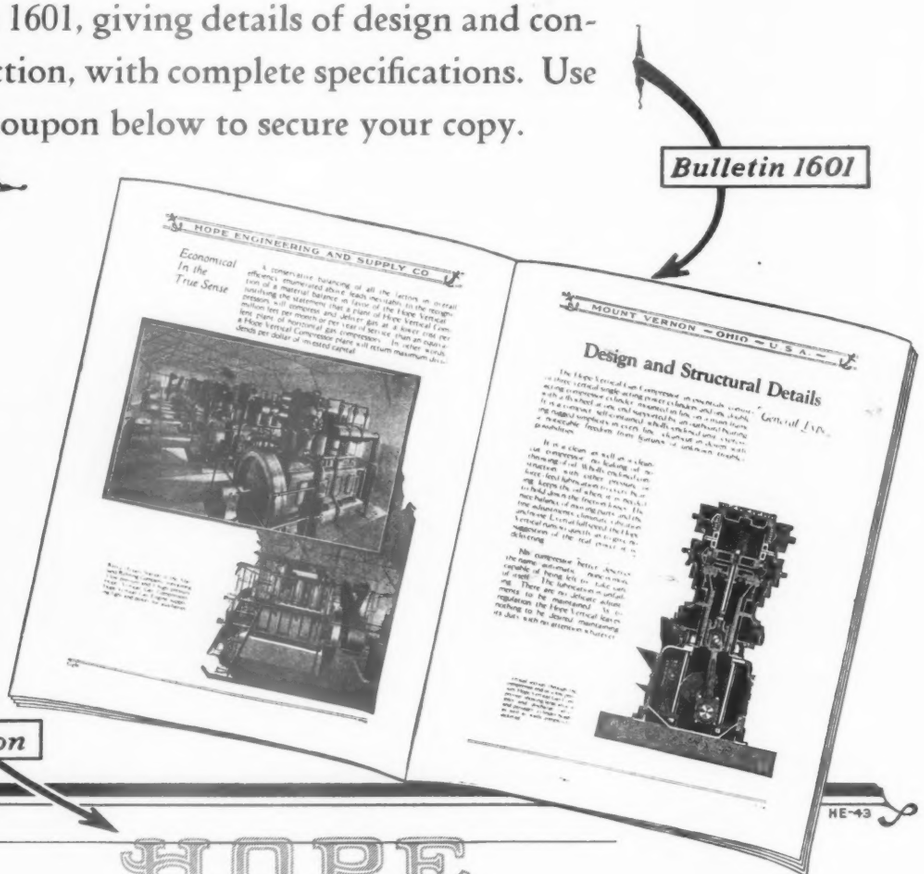

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though it can be done without danger in a one pass furnace. So far as the single flash method of evaporation is concerned, for volatile crudes or distillates, the two pass furnace may be considered essential in order to avoid a capacity limitation of in the neighborhood of 3,000 or 4,000 bbls. (50's) per day; conversely, the single flash method may be essential to the operation of a two pass furnace—the less

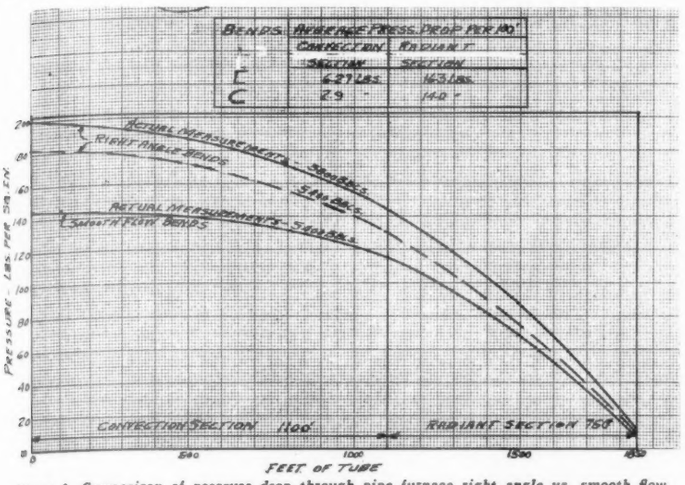
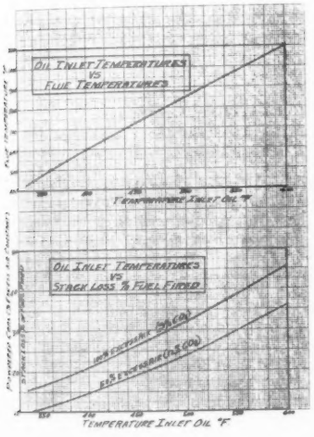
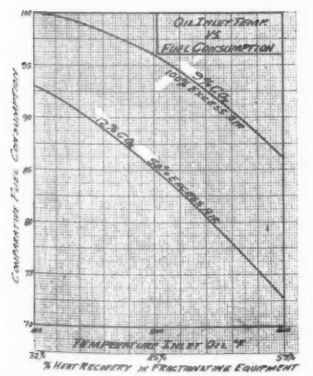


Figure 3—Comparison of pressure drop through pipe furnace right angle vs. smooth flow bends. Furnace heating 5,400 50-gallon barrels from 385 degrees to 800 degrees Fahrenheit.

the volatility of the charge and the greater the percentage of heat absorbed by radiation, the more true this is.

The best method of controlling the still outlet temperature is a question upon which opinions differ. There will hardly be disagreement with the statement that the most important factor in maintaining constant oil outlet temperatures is the ability to hold constant the quantity and temperature of the heat deliv-


OIL INLET TEMPERATURES VS FLUE TEMPERATURES
TEMPERATURE INLET OIL °F
OIL INLET TEMPERATURES VS STACK LOSS % FUEL FIRED
RADIATION LOSS
CONVECTION LOSS
TEMPERATURE INLET OIL °F



ered. With the help of a CO_2 recorder draught gauge and reliable temperature readings at a point of relatively high temperature, but out of the radiant heat zone, this may be satisfactorily accomplished even with manual control of the fuel supply.

The heat recovery from the fractionating equipment and the furnace efficiency are to some extent interdependent, and the character of this relationship is shown in Figures 4 and 5. Of the additional heat recovered by raising the inlet temperature of the oil from 400 degrees to 500 degrees Fahrenheit, some 50 per cent is lost by the consequent increase of stack gas temperature. In other words, if 400 degrees and 500 degrees represent the maximum temperatures to be obtained by two different systems of heat exchange, although the higher temperature reclaimed some 13 per cent more of the heat delivered to the bubble tower, the actual cost consumption would only be decreased some 6 per cent or less.

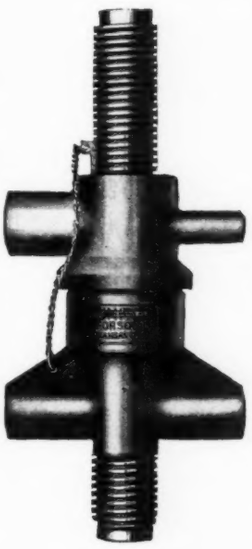
Bubble Tower

To turn now to the bubble tower and specifically to the heat recovery. Figure 6 is intended to represent a 22-plate column, 19 above the vapor inlet and, say, 3 below, with provision to take 5 overhead streams. The yields and temperatures shown were obtained on a 100-bbl. experimental unit, in which all the heat except that in the liquid streams was taken out in the naphtha condenser, the reflux originating at the top of the column. The crude is shown on the left flowing through exchangers and being heated first by the naphtha vapors and then by each side stream successively. It enters the tower 80 per cent by weight vaporized at 780, an additional 5 per cent being vaporized by the steam, 0 5 pounds per gallon of charge. The optimistic assumptions have been made that the stream would leave the naphtha condenser with 20 degrees of the top of column temperature, and cool the side streams to within 20 degrees of the crude temperatures entering each exchanger, finally deducting 10 per cent for radiation losses.

The resulting crude temperature of 450 degrees Fahrenheit represents a heat recovery of about one-third or 38 per cent if the heat in the stream is omitted. In actual practice, the heat recovery is about 75 per cent of this amount. Vaporization of the crude has been neglected but would not significantly change the result. Change in character of the crude and the percentage of overhead streams will, of course, change the result but there is little question that this method of running will not result in a recovery of more than 30 per cent of the heat put into the oil and the superheat in the steam, i.e., of the heat input of the furnace.

Were the crude routed as in Figure 6 at the right, removing now the heat of vaporization not only from naphtha vapors, but from the vapors as they enter the plates from which the side streams are taken, the picture is qute different. The vapors now interchange with the crude at 315 degrees, 415 degrees, 485 degrees and 615 degrees, respectively, instead of 285 degrees as in the first case.

THE "UNITED"



PUMPING JACK ADJUSTER

The United Pumping Jack Adjuster consists of a trunnion bearing which rests directly on the bearing casting of an ordinary pumping jack, with a handle bar nut which rests on the trunnion mentioned above with a ball race interposed between and which has threaded into it, a tubular adjusting screw.

The Polish Rod is connected through means of the United Polish Rod Grip and Swivel Bearing which rests directly on top of the screw. This appliance provides in connection with a pumping jack, all of the adjustments that are provided with a temper screw in use on a drilling well. With the United Pumping Jack Adjuster the valves of a pumping well can be "Bumped" and accurately spaced while the pumping operation is in progress without changing the stroke of the Pumping Jack. Where standing valve pullers and Garbutt attachments are used, the standing valve can be unseated by means of the adjusting screw. Sucker Rods that have become unscrewed can be reconnected by using the adjusting screw to lower the swinging section into contact with the lower section and screwing same together.

When Pull Lines break the Pumping Jack can be released of the Sucker Rod load by means of the Adjusting Screw and the Pull line repaired easily and quickly by one man. The construction is very rugged, being of electric furnace steel, the adjusting screw being made of one piece of steel tubing.

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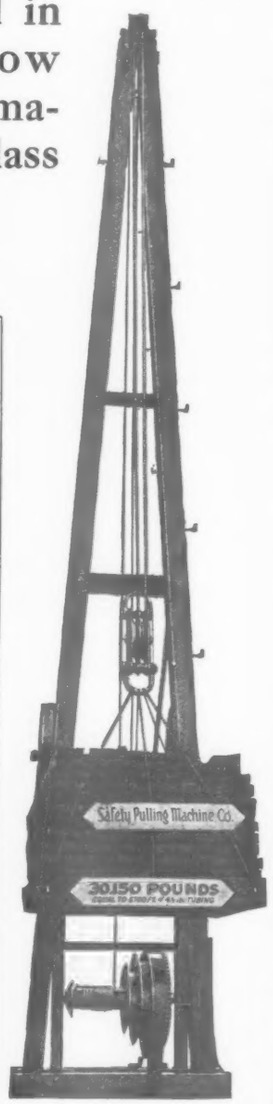

Specifications

DEEPWELL

Eclipse Deepwell up to 8000 ft. 2" Tubing, Weight 3645

Mast 8x10x36 ft., Douglass Fir A-Style Two Wheel Truck, two 16" Bronze bearing crown pulleys, 2½ Steel Pin mounted in malleable boxings. Large supporting plate 16" dia. between crown pulleys, eliminating any chance of bending pin.

Reel or Drum; 32 lb. 8¼ casing filled with concrete for winding drum, differentials banded with 3/16 band iron, brake surface 6"x40", choke brake style same as Star drilling machine.

The whole reel assembly is mounted on 2¾ square steel shaft extending clear through reel, secured by three heavy castings.

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At each temperature an amount of heat is removed sufficient to enable the removal of the side stream below in the desired quantity. Compared with the previous 38 per cent, some 49 per cent of heat could be recovered under the conditions given. Compensating for increased stack losses might make the comparative figures 38:44.

Condenser Surface

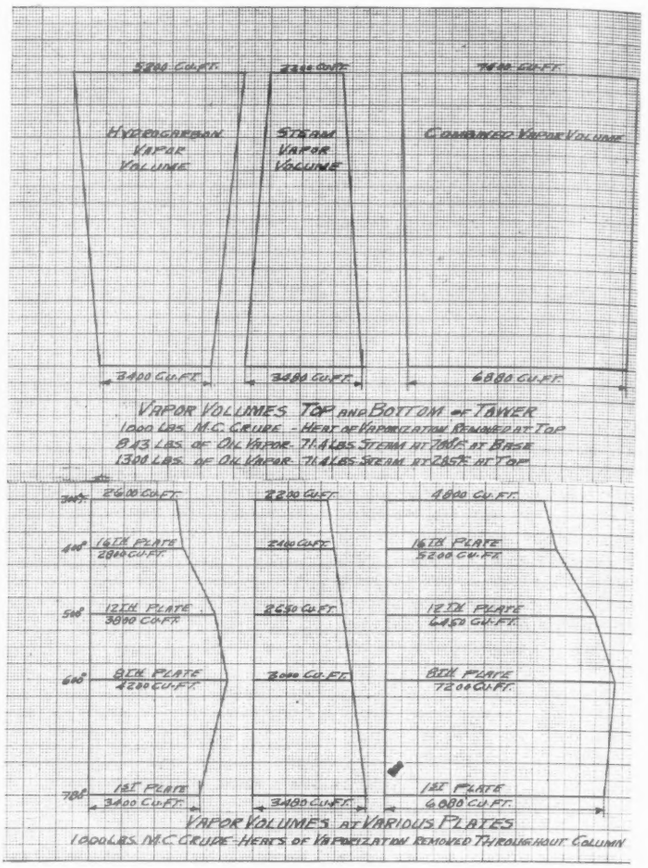
Obviously the condenser surface per B.t.u. recovered would be less for a given stock and one set of yields. Offsetting this is the practical consideration that each side stream cooler must be made sufficiently oversize to allow of the estimated variations in yields, and in addition each of the vapor heat exchangers must also be designed on a similar basis. On the other hand a single vapor exchanger will take care of any change up to the designed heat capacity of the tower. The first scheme of heat removal is entirely practical, the second is not. In between the two extremes there are quite obviously practical compromises.

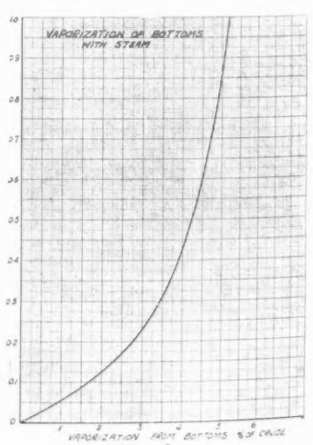
Figure 7 shows in approximation the change in volumes of hydrocarbon vapor and of steam, based on 1,000 pounds of crude 87 per cent vaporized, 0.5 pounds of steam per gallon of crude having been passed through the bottoms, all the heat of vaporization and heat of the steam removed at the top in one case and through the column in the other. The steam quite clearly takes up much valuable space in the tower above the vapor intake, even if used in much smaller quantities than here indicated and, moreover, renders no service in return. Its work has been done in the stripping section below. At the cost of some complication it may be removed by sealing off the section of the tower below the vapor inlet, and condensing it separately, pumping the oil condensed back into the tower at a suitable place. The overhead products are not changed by this method.

To handle the vapors from 60,000 pounds per hour of the above crude would require a tower operating at 2 feet per second velocity in the free space 8.8 feet in diameter; the removal of steam would bring this down to 7.45 feet; to handle the naphtha and refined oil vapors (34.5 per cent of the crude) alone with no steam would require a 5.26 feet column. Sixty thousand pounds per hour is about 4,000 fifty-gallon barrels per day. Eight thousand 50s would require an 11-foot column, the steam being sidetracked.

Column Velocities

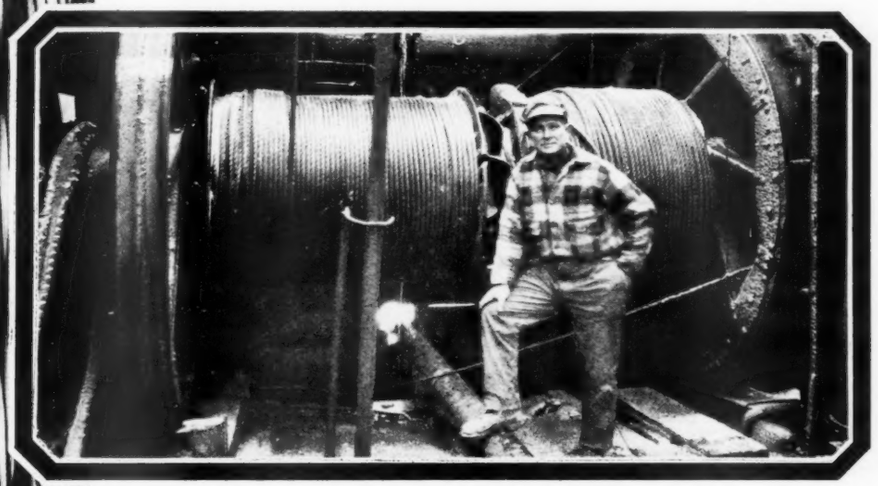
In any case, should column velocities limit capacity? Casual observation of a bubble tray at work is convincing evidence that the interchange going on is not solely, or possibly to any great extent, a question of a distorted vapor bubble offering a maximum surface in passing through a pool of liquid; rather of a dense shower of drops suspended in the vapor stream. It is not as extreme as it may sound to imagine a tower in which the liquid on each plate is almost entirely in the form of suspended drops, the plate above protected from entrainment. The diameter might then be governed by the liquid flow capacity.





Steam is an expensive distilling means—the value of its head mostly negative because of the cost of removing it. Unless heat is applied to the oil from an

AMERICAN WIRE LINES



Second Deepest Well in Mid-Continent Drilled With American Wire Line

The photograph shows the American Wire Line used in drilling the second-deepest well in the Mid-Continent—a Roxana-Skelly well in Garfield County, Oklahoma—6110 feet deep.

American Wire Lines dominate in the Oil Industry through sheer dependability. The unique research, manufacturing and testing facilities of the American Steel & Wire Company render possible the production of wire of *uniform* specifications—and the manufacture of lines that measure up to definite standards of strength and durability without accidental variations.

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EXPORT SALES REPRESENTATIVE: Oil Field Equipment Co., Inc., 30 Church St., New York City

REID OIL FIELD MACHINERY

outside source its usefulness rapidly decreases as the rate rises, since the vapor pressure of the liquid diminishes by virtue both of the removal of the lighter constituents and of the drop in temperature of the body of the oil, which is supplying the heat. This is illustrated in Figure 8. The first tenth pound of steam carries 0.175 gallons per pound; between 0.4 and 0.5 pounds it carries 0.035 gallons per pound. The curve represents early experimental data and is merely indicative. The flash of side streams may be markedly improved with minute amounts of steam if applied either in or directly leaving the column, i.e., at the boiling point of the oil.

The boiling range of the strippings is surprisingly wide, covering almost the entire range of the crude—a characteristic of flash separation without fractionation.

Heat Consumption

Summing up on the question of heat consumption, it is safe to say that the single flash method coupled with single tower and overhead removal of vapor heat can be used to evaporate crude oil to a 10 per cent bottom at furnace efficiencies of 75 per cent and heat recovery of 30 per cent of the amount delivered to the tower by the furnace, that capacities up to 8,000 fifties may be obtained using towers of entirely practical diameters.

The quality of the naphtha is governed by the top of tower temperature held constant by a temperature controller actuating a bypass valve in the reflux pump operating at constant speed. The entire system calls for only two points of control, the temperature of the oil leaving the furnace and that of the vapors leaving the bubble tower.

The still is extremely flexible and will process a wide variety of raw materials, treated naphthas and lamp oils, pressed wax distillates, Pennsylvania, Mid-Continent and Gulf Coast crudes, with satisfactory results so far as heat recovery and the character of the products are concerned.

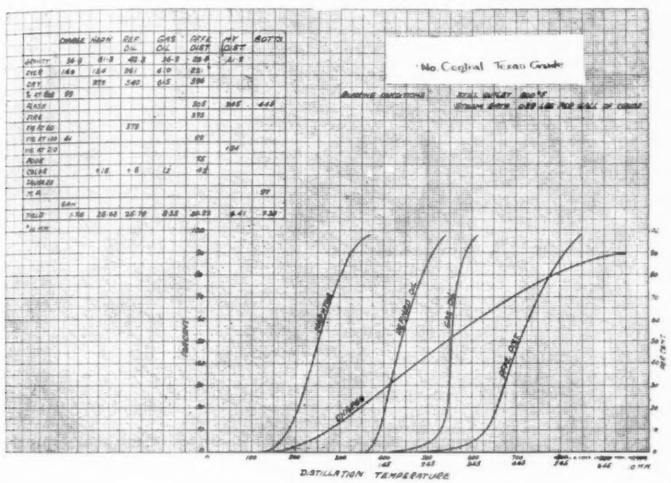
Figures 10 and 11 show typical separations affected by a unit of this kind. The gas oil stream of the first crude shows the typical pipe still "tail" in the lower boiling range: that of the Pennsylvania the effect of a small amount of steam applied just outside the tower.

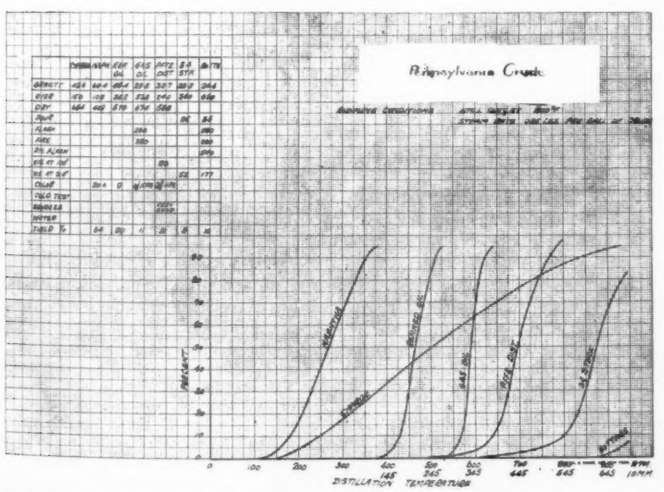
Wax Distillate Yields

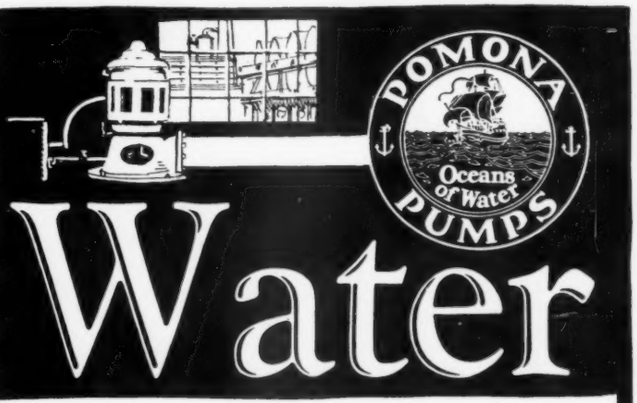
The yields of wax distillate are large compared with those from coking stills or even from steam running. On the one hand practically no cracking has taken place, on the other, the separation from high boiling "amorphous" wax is more complete. The ease of pressing a distillate and of sweating the separated wax depends not on whether it has been cracked or not, but upon its boiling range, over which we now have some control, and particularly upon the temperature at which the last 5 per cent boils.

Figure 12 compares a cracked with three noncracked distillates; the squeeze test indicates that the pressing qualities improve as the distillation range decreases. Further experiments show that first a gradual decrease in pressing rate and finally a sudden decrease may be expected as the temperature at the 95 per cent point of a vacuum assay increases, and this in spite of the fact that sufficient gas oil may be added to the lower end of the boiling range to make the viscosities in each case the same. Coincident with the sudden change in pressing rate, the wax becomes either difficult or impossible to sweat.

The pipe still and the fractionating tower have revolutionized refinery practice. The increase in furnace efficiency and in heat recovery, coupled with the decreased amount of rerunning promise to cut the fuel consumption under stills in half. In the past a refinery covering a broad field of products has been as







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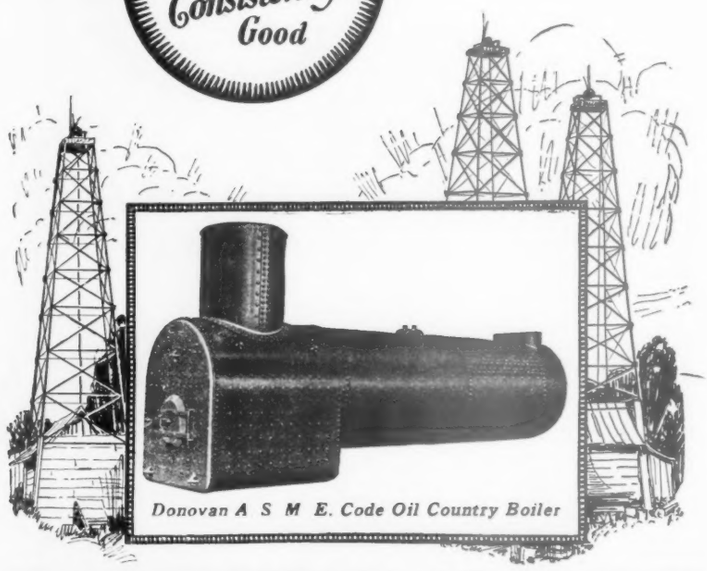

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El Dorado, Arkansas,
September 2, 1927

DONOVAN BOILER WORKS,
Parkersburg, W. Va.

Gentlemen:

Enclosed you will please find photographs of one of your 25 H.P. boilers which was in drilling service in our West Virginia properties from the year 1908 until the discovery of oil here in 1921 when the boiler was shipped to El Dorado and installed in our steam plant.

The boiler is in 24 hours service continually and we find it the most economical boiler in any service.

Yours very truly,
IMPERIAL OIL & GAS PRODUCTS CO.,
(Signed) J. H. MANN.

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NONE BETTER

much a water as an oil distillery. The pipe still simply refuses to take the steam. Distillations formerly requiring 100 pounds of steam per barrel and more, here take 10 to 15. It may not save the small refiner so much in labor but the factory running 25,000 bbls. of crude to coke and to the whole range of finished products may cut the still crew down to one-sixth the former number of men by the substitution of pipe stills in the initial running.

Future Trend

The trend of refinery practice, it may be predicted, will be more and more in the direction of two distinct fields of distillation:

(1) Cracking, for the production of gasoline.

(2) Noncracking, for the production of lubricating oils and lamp oils.

The necessary production of lubricating and lamp oils will increasingly define the extent to which pipe stills operating at atmospheric pressure will be used. The cracking stock over and above that produced incidental to the production of lubricating oil will be crude oil, from which the natural gasoline will be removed by the otherwise waste heat of the cracking process. The cracking unit is nothing more than a pipe still with a pressure valve and a reaction chamber interposed between the furnace and the fractionating equipment. The pipe still then bids fair to pre-empt the field, its only competitor, and by no means an assured one, the high vacuum shell still for the distillation of lubricating oils.

CARRYING GAS AT HIGH PRESSURES

(Continued from Page 66)

with seamless pipe 83 pounds per foot or lap weld pipe 125 pounds per foot.

Pipe Line Deliveries

We should, however, apply to the above calculations the effect of the variation in compressability of natural gas. The 400-pound lines should deliver quantities.

16-inch— 24,000,000 cubic feet per day.

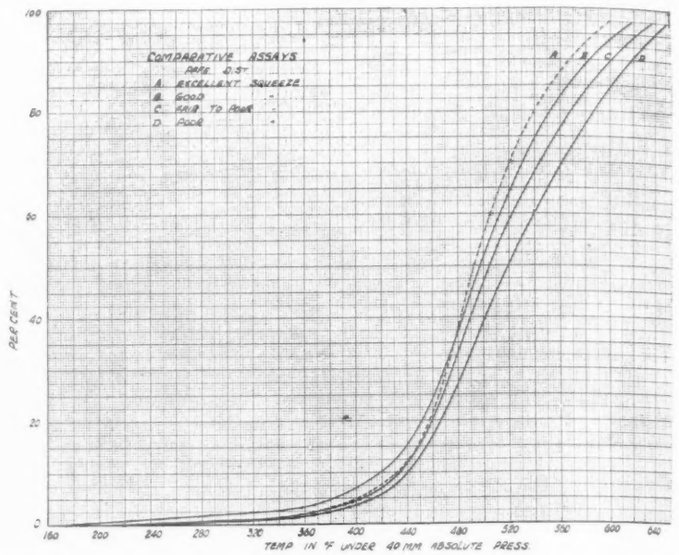
20-inch— 83,000,000 cubic feet per day.

22-inch—111,000,000 cubic feet per day.

The high pressure line should deliver a very high quantity of 128,000,000 cubic feet per day or greatly in excess of the 22-inch line noted above.

In addition to the cost of the steel which enters into the construction, there are numerous other cost items which are effected by the size of the line. The ditching costs should be in the ratio of the yardage or .556 for the 16-inch line to .842 for the 22-inch line. The larger pipe thus requires the removal of 50 per cent more dirt than the smaller. Incidentally, the larger pipe will be harder to keep down in boggy ground than will the smaller.

I am sure a 1,000-pound pressure line would have to be welded. On the other hand the welding problem is only slightly greater for the high pressure line than for the moderate pressure one, because



the stress from temperature contraction is identical and is decidedly the most severe stress to which a continuuos pipe line is subjected. The present 16-inch lines function so satisfactorily that they may be said to be the best type of line. On the other hand, should a company decide on high pressure transmission of gas and desire to reduce stresses on the welded joint, tests indicate that certain high pressure expansion joints could be successfully used with spacing of from 500 to 800 feet and eliminate practically all severe temperature stress.

The cost of welding 16-inch high pressure lines would not be materially greater than for welding the 20-inch moderate pressure lines, where the cost is now approximately the same as for coupling.

For painting and papering to prevent corrosion, the costs are approximately in proportion to the diameter—16-inch to 22-inch.

From the above it seems that a 16-inch high pressure line is a very much better investment than is a 22-inch moderate pressure line. This undoubtedly points the way to the use of even higher pressures, but most changes come by steps, so no time will now be devoted to the consideration of perfectly feasible pressure much in excess of 1,000 pounds.

By reducing the capital investment required for transmission lines it is obvious that gas can be carried to greater distances. Certain of the characteristics of natural gas do not pertain to manufactured gas, but the advantages from high pressure transmission will probably make this method preferable in the field.

CALIFORNIA CHAMBER RE-ELECTS C. W. BROWN

LOS ANGELES, Calif., Dec. 31.—Chester W. Brown was re-elected president of the Chamber of Mines and Oil for the third year in the election returns which has just been canvassed. Theodore Martin and R. A. Broomfield were chosen first and second vice presidents, respectively. H. L. Westbrook was re-elected treasurer and Edwin Higgins secretary.

The board of directors elected for the ensuing year consists of E. L. Doheny, Jr., David S. Ewing, Earl V. Gilmore, H. P. Grimm, W. R. Guiberson, Edwin Higgins, J. R. Hoffman, F. R. Kenney, M. E. Lombardi, A. B. Macbeth, A. C. Mattei, John McKeon, A. C. McLaughlin, E. J. Miley, H. L. Payne, R. L. Peeler, P. M. Pike, William Reinhardt, Fred C. Ripley, E. M. Smith, R. A. Sperry, F. C. van Deinse, A. L. Weil and Phillip Wiseman.

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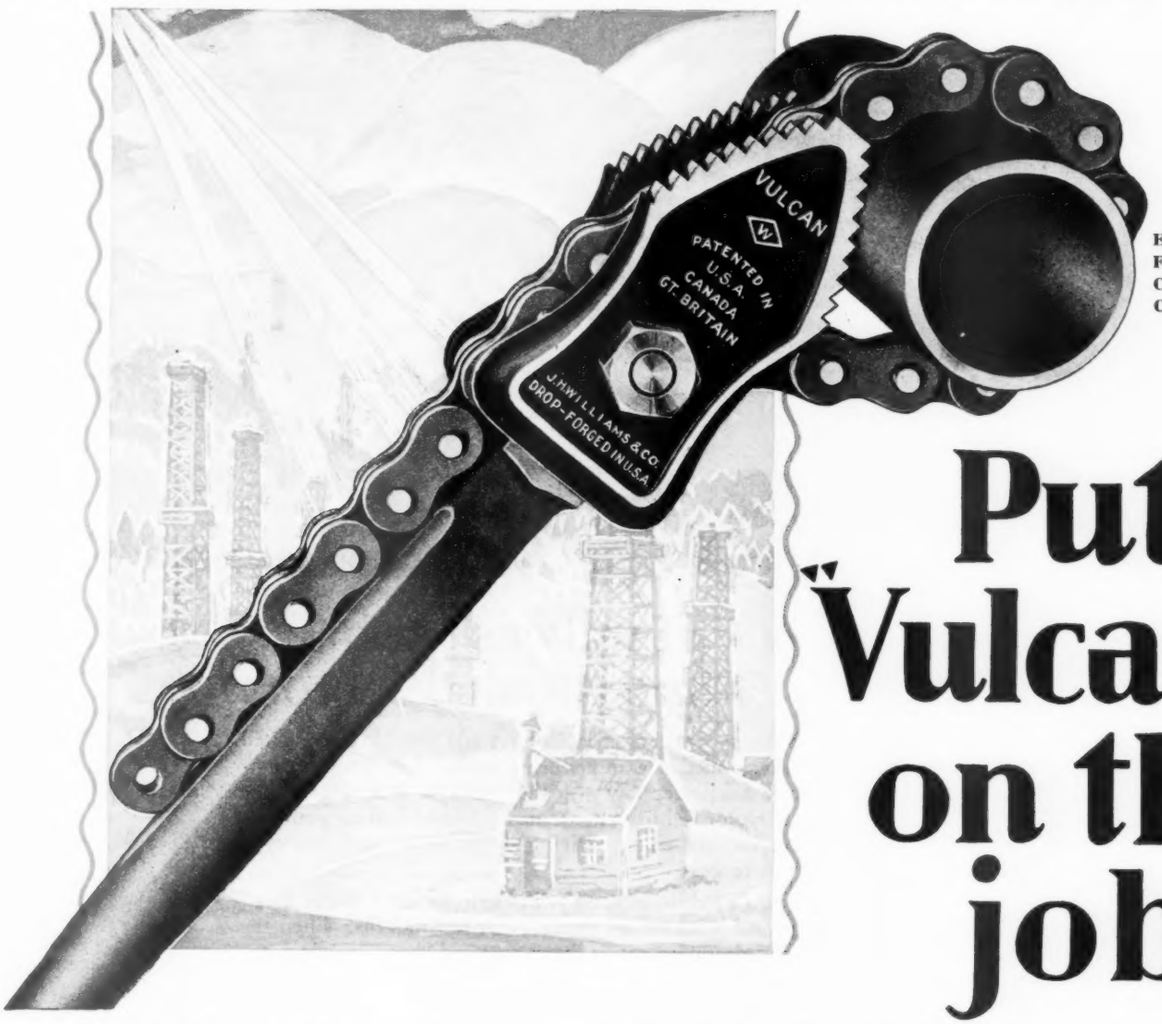

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Put Williams' "Vulcan" Tongs on any job, large or small, and you've got the pipe in a firm and slipless grip. Thousands of oil field users will tell you it's the finest tool for the purpose on the market.

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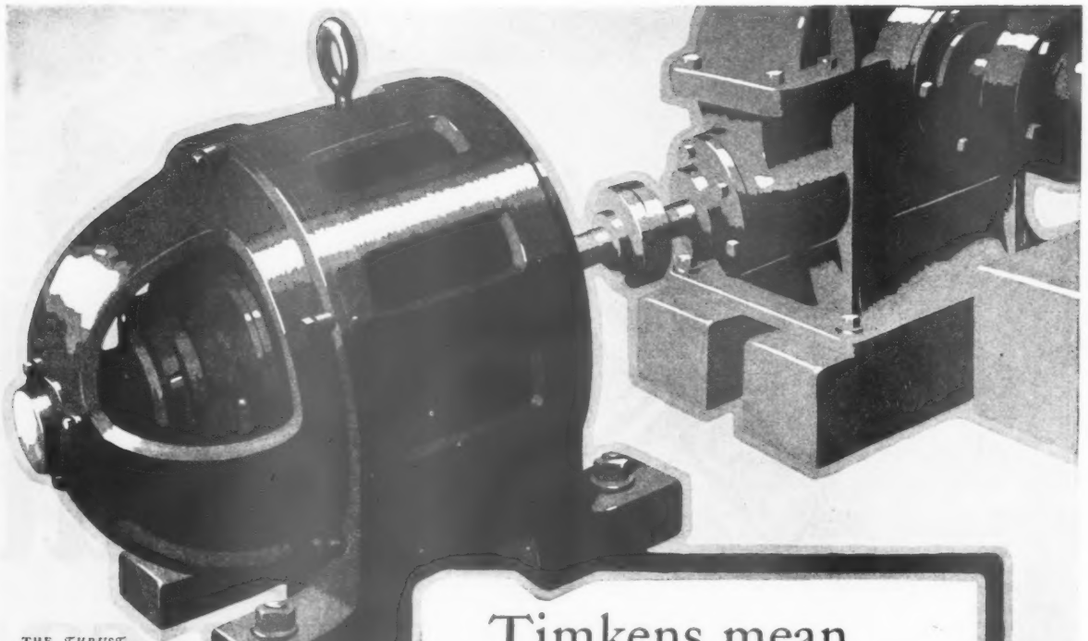

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Timkens mean Thrust-Radial Motors

The thrust-radial electric motor made possible by Timken Bearings means that neither friction, thrust, weight nor shock will perceptibly wear the bearings. It means that the same motor will have the same endurance and economy on floor, wall or ceiling; driving direct, or through any type of belt or gear.

All you need do is specify Timken Tapered Roller Bearings and lubricate only once every few months. Then the fear of dropping rotors, burn-outs and shutdowns is gone. There is no need for constant inspection. No overheated bearings. No dripping.

Your Timken-equipped motors take less space; there is less shaft length and overhang; much greater rigidity. Acceleration is faster and never destructive. Current cost is less. Savings are returned on so many cost items that it is often profitable to put in Timken-equipped motors throughout, replacing obsolescent types. Leading motor manufacturers will build in Timken advantages for you.

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TIMKEN *Tapered Roller* **BEARINGS**

GEOLOGIST DISCUSSES POSSIBILITIES OF THE SWEETGRASS HILLS AREA

By Victor Lauriston

CHATHAM, Ontario, Dec. 31.—At a meeting recently held in Calgary, Maj. G. G. Howard, chief geologist of the Sunburst Oil & Gas Co., discussed the oil and gas prospects in the Sweet Grass Hills area which extends from northern Montana into southern Alberta, and on the Alberta end of which a number of tests are now drilling, or will shortly be undertaken. In part, Major Howard's review of the situation was as follows:

"The area under discussion embraces a territory of about 3,700 square miles, about equally divided between Alberta and Montana; in Alberta comprising Ranges 6 to 14 west and Townships 1 to 6 north; in Montana Ranges 7 west to 7 east and Townships 32 to 37 north.

"The boundary anticline, with a trend paralleling the Hills uplift, is a high topographic ridge along the Montana-Alberta border. The topography represents the folding very closely, the formations dropping to the north with the topography and somewhat faster than the topography to the south and east. The principal highs on this anticline are the Reserve, Flat Coulee and Pinhorn Domes.

Once Naval Reserve

"The Reserve Dome was once a naval reserve, but it was found that there were only a few scattered forties of government land on it, it being some of the earliest settled land in the territory. It occurs in Township 37 north, Ranges 4 and 5 east, and is the highest fold on the Boundary anticline, the Virgelle-Colorado contact being 4,000 feet above sea level on its apex. It dips westward into the synclinal basin north of Gold Butte, as is very well proven by the logs of a number of wells drilled west of the apex, a dip of 500 feet being apparent between the Patterson-Dohr on the west flank of Reserve and the Anaconda-Brown, 3 miles to the southwest. To the east, north and south, good dips are observable in well-marked exposures. The east dips are the sharpest, in some places as much as 6 degrees being noted.

"A sharp syncline occurs between this structure and the Flat Coulee Dome, which is in Township 37 north, Range 5 east. From this syncline the beds rise at the rate of 7 feet per hundred to apex in a sharp fold which is very easily discernible, as the beds may be observed dipping away in all directions from a common high point in Flat Coulee for which the structure is named.

"To the east of Flat Coulee and along the range line between Ranges 5 and 6 east, another sharp syncline occurs, and the beds then rise from this trough to apex again in the north center of Township 37 north, Range 6 east. This fold, called Pinhorn Dome, after the customs station of the Canadian government, which is located on the northwest flank, is of gentler dip than the two former, the dips averaging about 4 feet per hundred, but this fold is the largest of the three and is equally as well developed and as observable as the others.

"Going eastward the course of the anticline may be traced for very considerable distance, but no doming has been observed in that direction. To the west of Reserve and along a prolongation of the axis line occurs the structural terrace on which the Rogers-Imperial gasser and the Dead Horse Coulee well of Imperial Oil, Ltd., were drilled. The Rogers-Imperial is 1,000 feet lower on the Virgelle-Colorado than the crest of Reserve. West of the Rogers-Imperial, the boundary anticline is lost in the Bow Island arch with which it merges.

"The anticline south of the hills, which may be called the Sweet Grass cross fold, is by no means as sharp as the boundary anticline.

Gas Supply For Montana

"It is to this area that Great Falls and other northern Montana cities will probably look for a permanent long-time supply of gas. The Rogers-Imperial well encountered a tremendous flow of gas from several sands; the Gladys-Belle and the Patterson wells on the west and southwest flank of Reserve Dome all had commercial flows of gas; and the two wells on the Bears Den fold had commercial flows of large volume under heavy pressure. In the Flat Coulee well now being drilled on Flat Coulee Dome, considerable gas as well as much oil has been encountered. All wells drilled, whether off structure or on, in this area have shown that sand conditions for the retention of oil and gas in commercial quantities are ideal, as, due to ancient shore-line conditions, much thicker and more numerous sands are in evidence than in the adjacent areas to the south, southwest and southeast. No wells have been drilled in the area on even fairly favorable structure without encountering gas in commercial quantities.

"Due to the intensity of the local folding as well as the distillation action of the near-by intrusions, which have come in contact with all the known productive horizons, distillation factors instrumental in creation of oil and gas are much more favorable than usual. Numerous showings of oil in considerable quantities in wells unfavorably located show that the territory is oil bearing. The richness of the shales and limes encountered in drilling or found in exposures is above that of most other Montana-Alberta districts in organic material, adding materially to the productive probabilities here.

Drainage Area

"The drainage area of these folds, particularly of the Boundary anticline, is practically unlimited, as they drain the Bearpaw-Sweet Grass-Cypress Hills syncline, giving an incalculable area from which oil and gas may be gathered into the crests of the folds. To me it is very apparent that all that is needed to obtain commercial production is to drill out the folds, especially considering the fact that they are as definitely closed as can be desired, and have all the requirements called for in the ideal oil and gas producing structure. Oil found in the Bear's Den and Flat Coulee wells in higher positions in quantities which might easily be called commercial bears this out.

"In the Flat Coulee well, this oil of high gravity and mixed base was found in the base of the Colorado and the top of the Kootenay, but as yet the well has not penetrated the horizons considered as real producing horizons of the area. In the Gladys-Belle, Anaconda-Brown, the Beaver, United and others, oil was encountered amounting to several barrels per day in the Colorado in spite of their unfavorable location, the oil still flowing from the Beaver-United on the Milk River with lower level water which was never shut off. On the Sweet Grass arch cross fold, the Sunburst Field is and has been producing for years, and folds such as Grandview and Utopia formed at the same time, through the same factors and under identical conditions, can reasonably be expected to show commercial production.

"All in all, if there is any such thing as geological certainty, it is to the Sweet Grass Hills area that we must look for assured long life gas production and our surest next rich oil fields in northern Montana."

TO TEST MARINE ENGINES

Hoping to settle practicably whether steam or internal combustion engines provide the more economical marine propulsion, Sir John Reeves Ellerman, one of the world's largest shipowners, has placed orders with three of the best known English shipbuilding firms for three freighters of almost identical measurements, one to be fitted with balanced quadruple-expansion type reciprocating engines, one with steam turbine machinery and one with internal combustion engines.

Fluor Cooling Towers, manufactured of the finest materials obtainable for water cooling service, are structurally superior to all other fabricated cooling towers.

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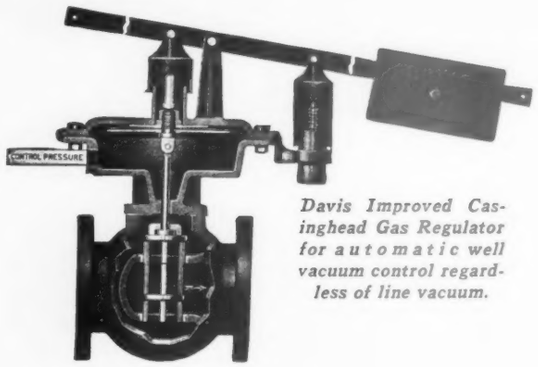

Davis Improved Casinghead Gas Regulator for automatic well vacuum control regardless of line vacuum.

See this regulator —watch it work— at any oil field

ALMOST anywhere that natural gasoline is made the Davis Improved Casinghead Gas Regulator will be found. This regulator is giving accurate control of well vacuum in thousands of installations.

See one of your neighbor's—and watch it work. The external counterweight makes action visible. Move the weight with your hand—first appreciably and then slightly. Watch it come back smoothly, steadily to its original position each time, showing that both small and great pressure variations in line vacuum are accurately controlled.

Then ask your neighbor about Davis performance. He will tell you that Davis Regulators give exact vacuum regulation, that the simple design makes maintenance or repair infrequent but easy, that the regulator is fully protected against weather in the most exposed locations.

The perfection of Davis regulators is based upon years of oil field experience and over half a century of valve making. The catalog will supply any details your neighbor may overlook. Write for it.

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IMPORTANT PRODUCTION GAINS IN 1927 CONFINED TO THREE STATES

By James McIntyre

The estimated production of the United States for 1927, 905,947,000 bbls., will be revised by later figures when detailed reports from all the pools in the country —and there are hundreds of them—have been received later in January, but it is definitely known that the 900,000,000-bbl. mark for 12 months' production was passed in November and the 365 days ending with Noverber 30 showed a total production of 902,635,027 bbls., or an average for the 12 months of 2,472,974 bbls. per day. The production for the 12 months ending November 30, 1926, was 762,642,840 bbls., indicating a gain this year of 139,992,787 bbls., or a daily average gain of 383,418 bbls. a day.

The bulk of the excess production came from the Seminole area in Oklahoma, the Gulf Coast and West Texas contributing largely to the remainder of the increase.

The production for 12 months ending with November 30, 1926, and the same period ending with November 30, 1927, was as follows:

Production of the United States

	12 Months Ending Nov. 30, 1926	12 Months Ending Nov. 30, 1927
California	223,689,774	232,089,690
Oklahoma	173,858,415	271,673,865
Texas	163,068,067	220,300,045
Kansas	49,099,151	42,153,009
Arkansas	60,511,300	41,714,816
Louisiana	24,036,052	24,061,914
Rocky Mountain	37,741,878	30,041,288
Eastern Fields	39,247,200	40,600,000
Total	762,642,840	902,635,027

The figures show a gain in California of 8,999,916 bbls. in Oklahoma of 97,815,450 bbls. and in Texas of 57,231,978 bbls. Declines are seen in Kansas, Arkansas, the Rocky Mountain Fields; little change in Louisiana, gains in the Gulf Coastal area having offset losses in north Louisiana, and a gain in the total of the eastern fields, caused chiefly by modern production methods in Pennsylvania and New York and the new field in Michigan.

The industry will enter the new year with a production of about 60,000 bbls. a day more than at the opening of 1926, which is not a serious increase in itself, but with an additional 65,000,000 bbls. in crude stocks accumulated during 1927, which year broke all records for production with a peak around 2,600,000 bbls. a day late in July.

Following are the figures for all divisions in November with the production by pool of the Mid-Continent and Gulf Coastal Fields:

SUMMARY BY PRODUCING DIVISIONS
Crude Oil Production in Barrels, in November, 1927. Mid-Continent Fields.

	Daily Av.	Month
Kansas	110,429	3,312,870
Oklahoma	769,446	23,083,380
North Texas	88,038	2,641,140
Central Texas	48,825	1,464,750
West Texas	219,407	6,582,210
Panhandle Texas	82,951	2,488,530
East Central Texas	28,549	856,470
Arkansas	96,892	2,906,760
North Louisiana	50,207	1,506,210
Total November	1,494,744	44,842,320
Total October	1,509,908	46,806,893
Difference	15,164	1,964,573
Gulf Coast and Southwest Texas		
Gulf Coast	139,215	4,176,450
Southwest Texas	28,943	868,290
Total November	168,158	5,044,740
Total October	171,054	5,302,674
Difference	2,896	257,934
Production by States		
Kansas	110,429	3,312,870
Oklahoma	769,446	23,083,380
Texas	621,213	18,636,390
Arkansas	96,892	2,906,760
Louisiana	64,922	1,947,660
Total November	1,662,902	49,887,060
Total October	1,680,962	52,109,567
Difference	18,060	2,222,407
Production of the United States		
Oklahoma	769,446	23,083,380
California	617,216	18,516,467
Texas	621,213	18,636,390
Arkansas	96,892	2,906,760
Kansas	110,429	3,312,870
Louisiana	64,922	1,947,660
Rocky Mountain	75,829	2,274,870
Eastern Fields	111,000	3,330,000
Total November	2,466,947	74,008,397
Total October	2,496,601	77,394,365
Difference	29,654	3,385,968

KANSAS
Daily Average and Total Monthly Production in November, 1927.

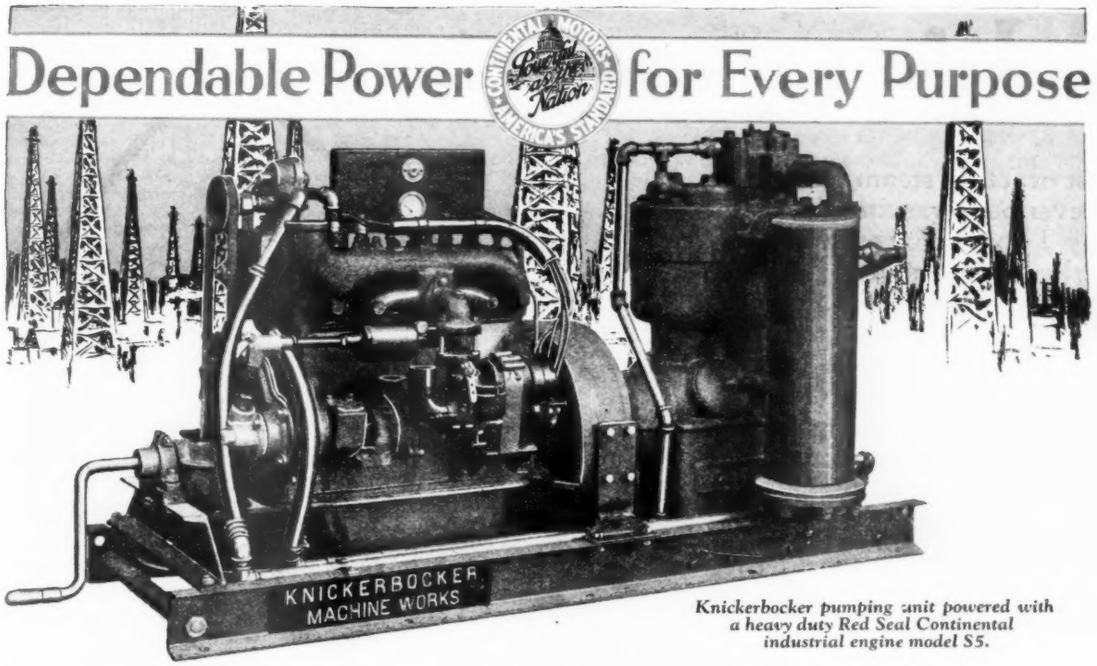
Marion County—		
Florence	656	19,680
Peabody	1,337	40,110
Covert-Sellers	734	22,020
Lost Springs	200	6,000
Total	2,927	87,810
Butler County—		
Elbing	2,335	70,050
Potwin	376	11,280
Cameron-Hol'inson	571	17,130
Wilson-Dunkle	1,612	48,360
Towanda	2,429	72,870
Fox-Bush	1,171	35,130
Nuttle-Koogler	1,807	54,210
Eldorado	7,334	220,020
Smock	205	6,150
Leon-Weaver	3,413	102,390
North Augusta	1,028	30,840
South Augusta	1,571	47,130
Sluss	348	10,440
Benton	45	1,350
Douglas	127	3,810
Keighly	1,769	53,070
Eastern Butler	1,017	30,510
Total	27,158	814,740
Greenwood-Woodson Counties—		
Sallyards	1,255	37,650
Teeter-Pixley-Scott	8,866	265,980
Virgil	6,358	190,740
Thrall-Burkett	2,268	68,040
Seely	8,743	262,290
Polhamus	1,221	36,630
Miscellaneous	1,960	58,800
Total	30,671	920,130
Cowley Counties—		
Rainbow Bend	1,944	58,320
Slick	904	27,120
Graham	583	17,490
Rock	224	6,720
Clark	200	6,000
Eastman	654	19,620
Winfield-New Salem	3,156	94,680
Miscellaneous	709	21,270
Total	8,374	251,220
Other Counties—		
Reno	15	450
Sumner	21,122	633,660
Rice	1,955	58,650
Russell	2,246	67,380
Kingman	10	300
Harvey	38	1,140
Chautauqua	2,231	66,930
Elk	2,299	68,970
Montgomery	1,502	45,060
Wilson	203	6,090
Allen	675	20,250
Neosho	599	17,970
Lyon	1,399	41,970
Miami	2,787	83,610
Franklin	481	14,430
Douglas	21	630
Bourbon	15	450
Woodson	1,060	31,800
Linn	214	6,420
Anderson	2,097	62,910
Coffey	306	9,180
Labette	24	720
Total November	110,429	3,312,870
Total October	113,199	3,509,169
Difference	2,770	196,299

OKLAHOMA
Daily Average and Total Monthly Production in November.

	Dy. Av.	Month
Washington County	5,866	175,980
Nowata County	4,942	148,260
Rogers County	1,872	56,160
Osage and Eastern Kay Counties—		
Burbank	35,698	1,070,940
Osage, outside Burbank	29,133	873,990
Total	64,831	1,944,930
Tulsa County—		
Bird Creek, Owasso, etc.	3,701	111,030
Red Fork, Sand Springs, Bruner, Turkey Mountain and Fisher	2,693	80,790
Bixby, Leonard & Jenks	2,172	65,160
Broken Arrow & Coweta	1,066	31,980
Total	9,632	288,960
Okmulgee, Muskogee, North Okfuskee Counties—		
Mounds, Beggs, Hamilton, Switch, Youngstown ⅝	7,465	223,950
Bald Hill and Haskell ⅛	3,368	101,040
Morris, Boynton, Cole	2,942	88,260
Okmulgee	2,361	70,830
Tiger Flats, Henryetta and Bartlett	1,639	49,170
Total	17,775	533,250
Okfuskee, Seminole and Hughes Counties, Seminole—		
Seminole City	60,958	1,828,740
Earlsboro	164,754	4,942,620
Searight	26,485	794,550
Bowlegs	128,025	3,870,750
Little River	43,897	1,316,910
Total Seminole	425,119	12,753,570
Deaner-Lyons, etc.	4,002	120,060
Wewoka	10,670	320,100
Cromwell	10,954	328,620
Papoose-Gilcrease	5,967	179,010
Welcetka	821	24,630
Holm-Jarvis	1,037	31,110
Yeager	525	15,750
Miscellaneous	371	11,130
Total	459,466	13,783,980
Creek County—		
Cushing-Shamrock	17,407	522,210
Glenn Pool, Sapulpa and Kiefer	7,689	230,670
Bristow, Kellyville and Depew	17,916	537,480
North Bristow, Pickett		

(Continued on Page 166)

Dependable Power for Every Purpose

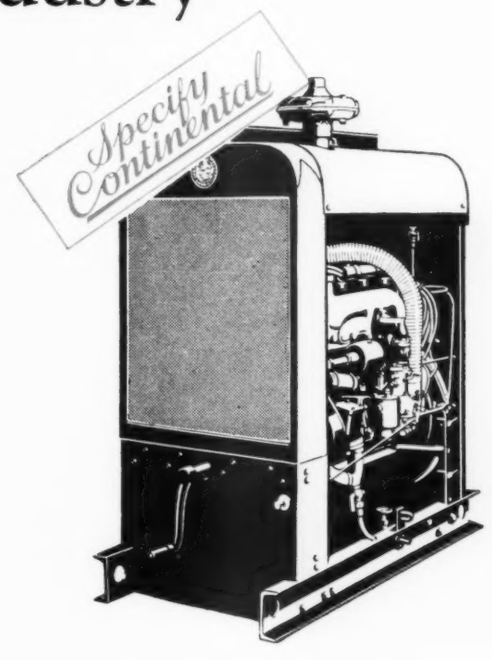


Knickerbocker pumping unit powered with a heavy duty Red Seal Continental industrial engine model S5.

The Heart of Industry

Experienced over the years in interpreting the power needs of an industry, Continental is able to strike right at the heart of industrial necessity by developing special models of industrial engines capable of greater power, more flexibility, better economy and longer life.

There is a complete line of heavy duty Red Seal Continental engines for every industrial need. Specify Continental and enjoy these qualities together with the protection which has contributed to Red Seal leadership in industrial power.



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The Largest Exclusive Motor Manufacturer in the World

Continental Motors

In the Shadow of Famous Achievements

The first practical steam pumping engine ever built was completed in 1698 by Thomas Savery. Recognizing the importance of boiler feed, Savery used two complete boilers with his engine ... the sole function of the second boiler being to supply feed water. Needless to say from an operating viewpoint this first bulky injector was fraught with uncertainty.

Since then the science of engineering has given the world the "Penberthy" automatic injector, a small device ... the essence of simplicity, easy to operate and absolutely dependable.

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NEW YORK
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INSTITUTE OF TECHNOLOGISTS HEARS SIR WALEY COHEN ON OIL

At the ninth annual dinner of the Institute of Petroleum Technologists, London, Sir Robert Waley Cohen, K. B. E., of the Shell company, responding to the toast to "The Petroleum Industry," said it seemed to him that Captain Hacking, the proposer of the toast, based his hopefulness for the future of their industry to some extent on the great use it would be to the world in time of war. He ventured to share his optimism, but rather on the ground of the immense value of their industry in times of peace. It was, of course, an amazingly comprehensive industry. If they reflected what that toast would have meant when he first entered the industry 30 years ago, it was easy to realize the extraordinary progress they had made. In those days their principal product was kerosene oil, and the petroleum technologists of those days were engaged in helping them to squeeze as much of their product into that fraction as was at all possible. In fact, many of them were engaged in writing letters to the press denouncing others who had been, perhaps, attempting to squeeze a little too much into that fraction in order to dispose in that way of the then valueless and embarrassing fractions they now called petrol.

It was just about that time the motor car came into use. He remembered when an undergraduate hiring a machine at Cambridge, and he did not think he ever took so much exercise as when he went for what they then called a drive, most of which consisted in pushing the machine along the road. (Applause.)

From that time onwards, however, all those engaged in the petroleum industry were called upon to create an entirely new industry, which had, of course, far outgrown anything that was thought of at that time. The product which was to be seen burning fiercely at a safe distance from every oil field became the cornerstone of the industry. This was a lesson which he thought was typical of the petroleum industry. They never had been and he hoped they never would be in a condition of stable equilibrium. They had always been, they were today, and he hoped they always would be in that nascent state in which the elements responded most readily to the ingenious activities of the petroleum technologist, and in which, if he had rightly learned the lesson offered to them by the pundits of the chemical world, they were most ready to enter into new combinations. (Laughter.)

New Industries Created

Side by side with the creation of that industry, the petroleum business had been called on to create a whole series of new industries in the 30 years which have elapsed since then. He had seen one industry after another grow up and develop into enormous dimensions through the activities of petroleum technologists working, as he thought they always did in their industry, in close co-operation with the industrialists, of whom he might, perhaps, humbly call himself one. There had been, for instance, the paraffin industry, which had caused the farthing dip of their youth to give way to the beautiful paraffin wax candle of today. There had been the bitumen industry, as a result of which the old supremacy of the road as a means of inland transport had been re-established. There had been the mineral lubricating oil industry, which had grown to immense dimensions and was supplanting the vegetable oils of an earlier age, which were now set free for food, and there was the fuel oil industry, which now commanded the allegiance of every navy in the world, and which—thanks to the invention of the Diesel engine—bid fair to command that of the mercantile marine also.

In fact, a revolution in human activity had been brought about by the creation of that succession of new industries which they called the petroleum industry. It had been a vital factor in the history of the human race, and he thought it had been very fortunate indeed in many of the circumstances by which it had been surrounded. Notwithstanding certain occasional evidences of the difficulty which politicians found in resisting the temptation to bring their industry within the embroglio of politics, national or international, they and the other nations of the world had, he thought, on the whole, escaped that disaster. He thought it would be an ill day for the life of any nation if it became anchored to any industry in such a way that the progress and the constant movement to which their industry is accustomed became stifled by the bureaucratic regime which was inseparable from any government industry. There were only one or two of the most backward countries in the world which had fallen to that temptation, and his belief was that they would soon come into line with the progressive nations. (Applause.)

No Artificial Shackles

Apart from that, the result of their freedom had been that the oil industry had been able to develop almost without artificial shackles of any kind, and competition had taken the form not of useless and wasteful price cutting, but of an honorable emulation in rendering new services to the human race in every country in the world, asking no favor from any people or government, but asking only for an openminded readiness to give them full credit for the services they were prepared to perform. The petroleum industry, as a result of that, had been a great force in the constructive progress of the world, and it had been able to build up that position because it rested on a sound, strong and, if he might say, above all, a profitable basis. They received from the consumer for their products a price which represented to him the value of those products, in the sense that by paying that price he got something more valuable than he could get in any other way, something which would give him the energy he required more readily and more cheaply and more efficiently than anything else. At the same time they had been able to offer to the great public on whose enterprise, in the long run, the petroleum industry had always depended a sufficient remuneration to encourage and justify them in constantly pouring into the industry a stream of fertilizing capital.

From its earliest infancy, their industry had been conducted by a very close co-operation between scientific men and industrialists. They represented and were responsible to not any privileged class, but great bodies of men and women who had invested their savings, small and large, not in fixed interest bearing loans, but in constructive enterprises capable of carrying the world further forward and upward and of creating human prosperity. At that moment in the world's history, when they had passed through only comparatively recently a period of unparalleled destruction, he thought it would be difficult to imagine any higher purpose a man could set before him on entering on his career than that he should turn his back on the sheltered, regulated industries and activities and throw himself into the front line of that great army which was carrying forward the constructive evolution of the world. If he came with that spirit into their industry he would help them to open wide the sluice valves of wealth from the hidden resources which lay at the bottom of the world, and which, he thought, as they came out would make the world a much easier and a much more pleasant place to live in than it was today. That seems to him a far more constructive task than sitting in the councils of those who merely divided the spoils, and he hoped their great institution, with its immense numbers of men connected with the industry who were prospering in every corner of the globe, might help them in constantly attracting the best brains in every country to help forward the great industry. (Cheers.)

Sources of Energy

He said a little earlier that he thought

Built for Oil Field Service

The principal feature of GARCO Folded & Molded Brake Lining is ability to withstand the gruelling wear of oil-field service.

This lining is designed, developed and made with this one purpose in view. No matter how difficult, nor how severe your brake lining requirements are, GARCO will quickly banish brake lining troubles. It is especially adaptable to oil-well rigs and heavy duty. Made by the largest manufacturers of asbestos textiles in America. No job too big for this splendid product.

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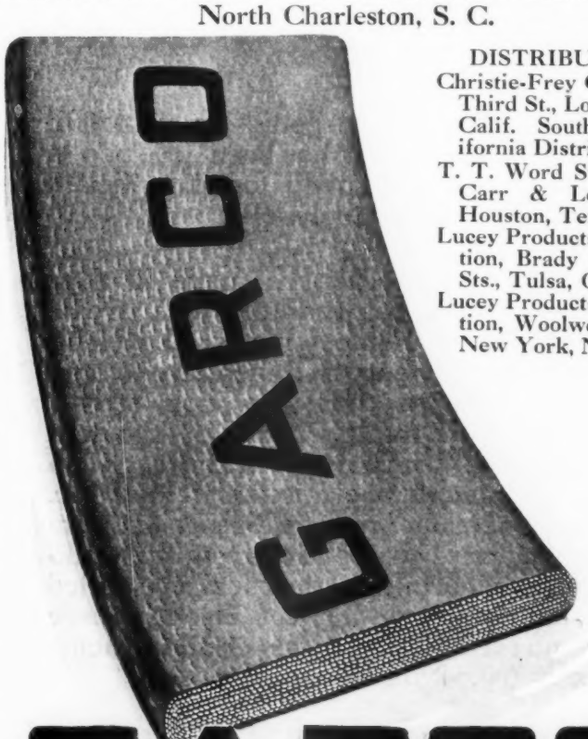

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GARCO

FOLDED & MOLDED BRAKE LINING

The "American" Oil Well Pumping Jack!

The "American" Totally Enclosed Oil Well Pumping Jack has been designed in answer to the demand for the efficient pumping of individual wells.

American Jacks are made in four sizes—twelve inch to fifteen inch stroke, fifteen inch to eighteen inch stroke, eighteen inch to twenty-two inch stroke, and thirty inch to thirty-six inch stroke. All gears are totally enclosed and run in a bath of oil which floods the bearings, insuring smooth operation and long life. The head proper may be disengaged from the cable and swung back from the walking beam, permitting the rods to be pulled without moving the jack itself. There are no screw mechanisms or adjustments necessary. No gears are exposed.

Compact, sturdy and economical in operation! Ask for bulletin 181.

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The American Well Works

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Dallas, Texas — Denver, Colo. — Atlanta, Ga. — Roswell, N. M.
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they derived immense benefit from not being tied to any anchorage, and that their prosperity seemed to be due to their being so free from all outside interference with the guiding forces of progress and efficiency. Sometimes governments which looked at their great developments and saw the wealth which they had created and were creating, were tempted to ask whether they should not try to conserve it. That was really the opposite process to killing the goose that lay the golden eggs; it was putting the goose into a cage so that its movements were restricted and its productivity decreased. Those who were tempted to do that forgot, he thought, the chief lesson of the petroleum industry. If so-called conservation were to be imposed on them, so that the generation was deprived of the advantage of free development under which their industry had prospered, could anyone, with all the great technical talent available in that institution, guarantee that the next generation would derive the benefit of the artificial restrictions so imposed? Could anyone say the next generation would be dependent on the same sources of energy? They knew, for example, that there existed in the very properties of the matter by which they were surrounded sources of energy far more potent than anything which could be got out of oil. Those sources were already well known, and it was not a great step forward for the world to discover how they were to be tapped. The day that secret was revealed the oil business would have to be doing something very different from producing oil by the means to which they were accustomed today, or indeed by any means of which they could conceive, and the governments which in their wisdom had exercised measures of artificial restriction in order to conserve what appeared for the moment to be the most valuable source of energy would find they had missed their market in a very serious way and that the sacrifices they had imposed on the present generation would have served no useful purpose. If they were left alone they would not allow evolution to overtake them. They would always, he hoped, in the future, as they had been in the past, be ready to create a new series of industries ready to meet the new circumstances as they came along. They were already applying the science of chemistry in a far more scientific and far-reaching way to the products of the oil industry than they had ever done before, and he did not think anyone present would be surprised if at some future meeting to celebrate the prosperity of the petroleum industry it would be the prosperity of producing products not necessarily that they might be burned, but that they might perhaps serve a very much more complex and higher use in the scale of human service.

In conclusion, Sir Robert said the petroleum industry was as sound and as strong as it had ever been, and that its health, which he thought was of such immense importance at the moment for the progress of the world, was never better than it was today.

KOPPERS CO. TO BUILD PHILADELPHIA PLANT

PHILADELPHIA, Pa., Dec. 31.—The Koppers Co., of Pittsburgh, will finance and build an $8,000,000 coke oven gas plant in Philadelphia to augment the present supply of gas produced at the city's gas works under lease to the United Gas Improvement Co.

The new plant will have a capacity of about 5,000,000,000 feet of gas a year. This will increase by 25 per cent the present output of the plants leased to the United Gas Improvement Co. This output is about 20,000,000,000 feet yearly.

The city lighting committee approved an ordinance authorizing the United Gas Improvement Co., as provided for in the new lease dated February 9, 1926, and effective January 1, to purchase by-product coke oven or other gas from other parties.

The ordinance was recommended by the Municipal Gas Commission, created by the new lease to supervise the execution of the agreement, the price of gas and the operation of the plants. This commission consists of Samuel Rea, former president of the Pennsylvania Railroad, chairman; Martha P. Quinn, banker, and Paul Thompson, vice president of the United Gas Improvement Co.

This commission, with W. H. Blauvelt, its technical adviser, recommended that the contract be executed by the U. G. I. with the Koppers Co. on its bid to supply coke oven gas at 34 cents per 1,000 feet. This company bid to make its own arrangements for a suitable site. This it has already acquired, consisting of 65 acres opposite the plant of the Philadelphia Electric Co., which is at Lewis Street, adjoining the northeast sewage disposal plant of the city. The coke oven gas plant will be north of the Pennsylvania Railroad bridge crossing the Delaware River.

By acquiring this auxiliary supply of gas the city and the U. G. I. will avert the necessity of making plant extensions. The price of 34 cents per 1,000 feet is regarded a fair figure for the new gas, which is to be piped to the present plant of the U. G. I., some distance away.

Mr. Blauvelt explained that this was the most favorable bid and the Koppers Co. was favored because of its experience and financial responsibility to proceed promptly with the construction and assure a continuity of service.

This advisory expert also expressed the belief that with this additional supply of gas it will be possible to standardize the present gas rate of $1 per 1,000 feet to consumers and avert an advance because of the production in greater volume.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended December 24 totaled 1,950,000 bbls., a daily average of 278,571 bbls., compared with 1,176,000 bbls., a daily average of 168,000 bbls. for the week ended December 17 and a daily average of 211,000 bbls. for the four weeks ended December 24.

At Atlantic Coast Ports—	Dec. 24
Baltimore	485,000
Boston	74,000
New York	754,000
Philadelphia	181,000
Others	250,000
Total	1,744,000
Daily average	249,142
At Gulf Coast Ports—	
Galveston district	.....
New Orleans and Baton Rouge	191,000
Port Arthur and Sabine district	.....
Tampa	15,000
Total	206,000
Daily average	29,429
At All United States Ports—	
Total	1,950,000
Daily average	278,571
Daily average four weeks ended	211,000

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended December 24 totaled 544,000 bbls. a, daily average of 77,714 bbls., against 336,000 bbls., a daily average of 48,000 bbls. for the week ended December 17, and a daily average of 84,679 bbls. for the four weeks ended December 24.

At Atlantic Coast Ports—	Dec. 24
Baltimore	152,000
Boston	.....
New York	72,000
Philadelphia	239,000
Others	61,000
Total	524,000
Daily average	74,857
At Gulf Coast Ports	20,000
Daily average	2,857
Total Atlantic, Gulf Coast Ports	544,000
Daily average	77,714
Daily average four weeks ended	84,679

Distribution of total California receipts is as follows:

Crude	79,000
Gasoline	465,000
Gas oil	.....
Lubricating oils	.....
Total	544,000

ONLY THE *VERTICAL BOOM* AND *OVERLOAD RELEASE* CAN DO IT

FOUR WINTERS ago, early Barber-Greene users exploded common gossip by working their Barber-Greenes into mid-winter. The gossip was that no ditcher could be built to dig through frozen ground.

The reasons why the Barber-Greene digs so surprisingly through frost, are:

Its vertical boom "Mills" — not shovels — through most anything. Its overload release guards against the shocks of such tough digging.

As further check, ask for "Ditching Snap-shots and Records." This book details "Through-frost-at-a-profit" jobs, the number of which increase mightily each season.

MORE GOSSIP EXPLODED

The exploded gossip is that no ditcher can dig through frozen ground

Barber-Greene Company
600 West Park Ave., Aurora, Ill.

Vertical Boom Barber-Greene DITCHER

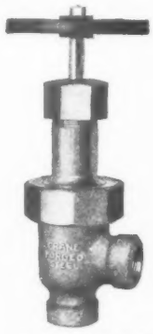
Four to Seven Feet Maximum Depths
Standard Widths: Eighteen to Twenty-four Inches
Also, Conduit and Curb and Gutter Specials

Crane forged steel materials for cold service

3000 pounds working pressure—oil, air, gas, or water—at atmospheric temperatures

No. 206X Globe Valve.

No. 208X Horizontal Check Valve



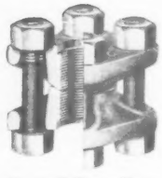
No. 207X Angle Valve

No. 300D 90° Elbow.

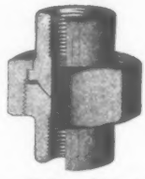
No. 302D 45° Elbow.

No. 307D Cross.

No. 304D Tee.



No. 330D Flange Union



No. 244H Ground Joint Union.

No. 303D Street Elbow

Valve walls are uniform in thickness. Stems, discs, and seats are regularly furnished in special heat-treated stainless forged steel, hardened to resist severe service under extreme erosion. Discs and seats are renewable. Malleable iron wheels are supplied unless lever handles are specified.

This line of fittings is complete with box unions. The flange union is for 6000 pounds working pressure. Oil men will find considerable relief from leaky joints by using these materials, as they have extra long thread lengths and heavy bands. Write for information on the full forged steel line.

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SOUTHWEST WILDCATS

(Continued from Page 46)

northeast of Pettus, is shut down at 2,303 feet; No. 1 Schultz, 3½ miles north of Red Ant Oil & Gas Co.'s No. 1 Perry, is rigging up (first reported as Hewitt's No. 1 Hicks.) F. Nichols' No. 2 Hicks & Hall, one-half south of Normanna, is rigging up. Red Ant Oil & Gas Co.'s No. 1 Perry & Chestnut, B. Q. Hadley Survey, 450 feet to east line and 1,600 feet to south line of farm at 805 feet moved on new rig and is to resume drilling.

Caldwell County

Alexander-Lyles & Adams' No. 1 McConnell, William Spillars Survey, has been spudded in. Dickinson & Smith's No. 1 Martin Callahan, Willard Cooper Survey, is moving in machinery. Detex Oil Co.'s No. 1 Hardeman, 4 miles north of Luling, shot at 3,075 feet, is waiting to clean out. Charley Hirtz's No. 1 Will Parr, 3 miles north of Lockhart, is location. John S. Storey's No. 1 Mrs. Thomson, John Lawrence Survey, 150 feet to north line and 600 feet to east line, is location. The Texas Company's No. 1 E. A. Robuck, Ben McCulloch Survey, 1,200 feet to southwest and 600 feet to southeast lines, has been spudded in.

DeWitt County

Williams & Gates' No. 1 Gohmert, G. W. Brooks League, 175 feet to north line and 300 feet to east lines, sold to San Antonio parties, at 760 feet is cleaning out and is to resume drilling.

Dimmitt County

Humble Oil & Refining Co.'s No. 1 City National Bank, Survey 654, located 700 feet to north line and 2,000 feet to east line, at 4,468 feet is waiting on casing.

Edwards County

Devil's River Oil & Gas Co.'s No. 1 Terney, C. C. S. D. & G. N. G., Section 167, located 2,640 feet to north line and 660 feet to west line, at 400 feet "hit oil" and is thought good for part of a barrel.

Frio County

Lain & Brown's No. 1 Edwards, Hooper & Wade Survey, 920 feet to CNL, is shut down at 1,250 feet.

Fayette County

National Oil Co.'s No. 1 J. C. Melcher, S. M. Williams League No. 1, location 300 feet to north and east lines of farm, first reported as E. A. Bainbridge, has been taken over by the National who will begin work at once.

Gonzales County

L. L. Jones and others' No. 1 Campbell, Moore & Bridges Survey, SW cor., at 1,975-80 feet cored hard sand and is straightreaming. Gonza Petroleum Co.'s No. 1 Sinclair is to resume drilling at 1,200 feet. L. P. Unkel's No. 3 Johnson, C. H. Jaeger Survey, is putting on rotary rig at 912 feet.

Guadalupe County

F. A. Lain's No. 1 F. C. Weinert, W. K. Estell Survey, 150 feet to CNL, is drilling at 3,017 feet. Eugene Sight's No. 1 Fred Kruger, Isaac Baker Survey, 450 feet to north and west lines, is shut down at 2,500 feet. H. H. Tample's No. 1 McAllister, Edward Kellett Survey, 450 feet to northeast and 1,420 feet to northwest lines, has resumed drilling and is down 2,021 feet.

Hays County

J. E. Rodgers' No. 1 Hohenburg, 2½ miles east of San Marcos, is shut down at 2,141 feet in Trinity.

Karnes County

Reynosa Oil Corp.'s No. 2 Butler, Block 43, located 1,000 feet south of the No. 1, at 1,947 feet will be cleaned out January 1 and deepened to 3,000 feet.

Kerr County

Walker-Van Duyn's No. 1 Barfield, B. B. Peck Survey, 4,700 feet to north line and 450 feet to east line, is drilling at 1,050 feet.

LaSalle County

E. V. Chenoweth's No. 1 fee, Survey 58, located in north central part of lease (part of Irwin ranch), has been spudded in. Sun Oil Co.'s No. 1 Washburn, Survey 157, located 3,500 feet to north line and 3,400 feet to west line, is drilling at 3,170 feet.

Live Oak County

War, Wood Hunt's No. 1 McNeil (formerly Delta Oil Co., Inc., who forfeited contract) has moved on new rig and resumed drilling at 1,010 feet and at present depth below 1,150 feet has showing of oil and gas. Houston Oil Co.'s No. 2 Brown Land & Cattle Co. is drilling at 636 feet.

Medina County

Pat M. Armstrong's No. 1 Mangold, Survey 62, located 200 feet to south and east lines, at 510 feet is putting on rotary to replace spudder. F. Banderet's No. 1 Mofield, Survey 532, located 550 varas to east line and 950 varas to north line of survey, has drilled water well but not yet spudded in oil test. Chacon Oil Co.'s No. 1 Jungman, Survey 31, located 950 feet to west line and 600 feet to south line, is showing oil at 768 feet; No. 2 Jungman, Survey 31, located 1,500 feet to east line and 500 feet to south line, is at 1,400 feet, approximate depth.

Maverick County

Ryan Consolidated Petroleum Co.'s No. 1 Indio, Survey 14, center, is drilling at 3,415 feet. Rycade Oil Corp.'s No. 1 Chittim, Section 129, Block 7, is waiting on water at 4,295 feet; No. 2 Chittim, Section 158, Block 7, is setting casing at 2,630 feet; No. 2 Sullivan at 5,445 feet tested salt water and is waiting orders.

Nueces County

Alamo Drilling Co.'s No. 1 Gallagher, 10 miles southwest of Corpus Christi on the old Brownsville road, has derrick up and rig on ground. Saxet Oil Co.'s No. 3 Meaney has set casing at 2,322 feet. Perry and others' No. 1 State Land has set 10-inch casing at 468 feet. Perry, Reed & LaPrelle's No. 1 Cochran is location.

San Patricio County

Houston Oil Co.'s No. 3 Humble is rigging up; No. 4 Humble is drilling at 2,306 feet; No. 5 Humble is location; No. 2 Ragsdale is in gumbo at 2,304 feet; No. 3 Ragsdale is location. Ed R. Herwick's No. 1 Tsesmelis is drilling. Mission Drilling Co.'s No. 1 Morris is drilling at 2,000 feet; No. 1 Hunter is drilling at 1,710 feet. William F. Morgan and others' No. 1 Welder, about 2 miles east of Sinton, is moving on. National Oil Co.'s No. 1 Sullivan, J. C. McMullen Survey, 500 feet to SW cor., is shut down at 1,700 feet to take core. Pargee Petroleum Co.'s No. 1 Beall is drilling at 810 feet. George Pickett's No. 1 Whitworth, NW NW Section 60, is drilling at 1,960 feet. Saxet Oil Co.'s No. 2 White Point Development Co. is drilling at 1,975 feet; No. 3 White Point Development Co. is location; No. 8 Rachal is drilling at 2,534 feet; No. 10 Rachal is standing at 400 feet; No. 1 Hunter is waiting on water. John Sigmund's No. 9 Robinson is in tough gumbo at 2,100 feet and will core as soon as it is passed.

Uvalde County

Pure Oil Co.'s No. 1 J. D. Smythe, Survey 687, located 740 feet to north and 146 feet to east of SE cor. of Survey 20, is drilling in shale (hard) at 1,260 feet.

Victoria County

J. J. Elam's No. 1 Vol Kutchka, 200 feet to CNL of Section 40, at 200 feet is waiting on surface casing. Humble Oil & Refining Co.'s No. 1 Welder in southwest corner of ranch, is drilling at 1,163 feet in gumbo.

Val Verde County

East Del Rio Oil Co.'s No. 1 Russell, Section 183, is shut down at 3,210 feet. Independent Operators' No. 1 Whitehead, SE SE Section 30, Block 4, is shut down at 3,925 feet. Magnolia Petroleum Co.'s No. 1 Whitehead, Survey 81, is drilling in black shale at 5,570 feet. O. O. Owens and others' No. 1 Mills, Section 128, Block 1, is drilling in sand and shale at 3,980 feet. W. V. Traves' No. 1 Wilson, Section 115, is drilling at 695 feet.

Zavala County

J. G. Pundt's No. 1 West, Fuentes Survey, NW cor., was to drill in after Christmas, at 1,310-12 feet. Western Gas & Fuel Co.'s No. 1 West, northern part of the county, at 876 feet is in basalt topped at 735 feet.

GULF COAST FIELDS

(Continued from Page 49)

2,600 feet in No. 1 Coit. This company's No. 11 McLean is down 5,075 feet, its No. 18 McLean 4,290 feet, and its No. 19 McLean at 2,000 feet. Sun has a location for No. 20 McLean. Yount Lee Oil Co. also has made locations for two more tests at Spindletop. These will be No. 51 Gladys and No. 51 McFadden.

Jackson County

Wright Brothers have a location for a new test. This will be No. 7 Drushel.

Liberty County

Republic Production Co. has brought its No. 39 Dolbear at Hull back in as a 150-bbl. pumper at 2,400 feet. This is an old well worked over. No. 89 Dolbear is drilling around 4,110 feet. Gulf Production Co.'s No. 87 Phoenix is drilling at 5,155 feet, and a rig is up to deepen No. 48 Phoenix. Gulf's No. 11 Thomas is drilling at 3,826 feet. Humble Oil & Refining Co.'s No. 10 Hooks-Bell still is fishing. The Texas Company is putting No. 2 Hannah fee on the pump, the well having failed to make a flowing producer in a sand at 3,100 feet. This company's No. 7 Hannah, being drilled jointly by the Vacuum Oil Co., is in sticky shale at 3,410 feet.

Orange County

Gulf Production Co. is breaking down 2½-inch drill pipe in No. 21 Lee Hager fee, an old well being deepened. No. 7 Hager & Moore is drilling at 2,916 feet. Gulf Coast Oil Corp.'s No. 5 Leon tested dry at 3,325 feet and has been shut down. Humble Oil & Refining Co.'s No. 1 Kishi-Lang is drilling shale at 3,038 feet. Rex Petroleum Corp.'s No. 6 Carbello is drilling at 3,010 feet. Rycade Oil Corp.'s No. 13-E State (Cow Bayou) tested salt water at 4,586 feet and liner and screen now are being pulled for deepening. Sinclair Oil & Gas Co.'s No. 5 Granger is drilling below 3,600 feet. Sun Oil Co.'s No. 2 Brown is down 4,890 feet. Texhoma Oil Co.'s No. 3 Chesson is to be put on the pump at 3,425 feet.

Wharton County

Gulf Production Co. has completed No. 3 Abendroth at Boling pumping 100 bbls. daily from sand at 1,446 feet. This company's No. 8 Chase has been abandoned after drilling to 1,114 feet and hitting cap rock. This company already has a derrick up for No. 9 Chase.

LOUISIANA GULF COAST

Acadia Parish

Salt Dome Oil Co. has completed No. 1 Cruse in the Evangeline Field, pumping 50 bbls. daily from sand at 1,675 feet. The Texas Company has abandoned No. 106-A Latrielle in the same field. The latter was drilled to 2,410 feet. No. 2-B Latrielle is waiting on a pumping rig. Cline and associates' No. 1 Lucy Wilson is drilling at 1,875 feet. Port City Oil Co.'s No. 6 Jennings-Heywood is to be put on the pump at 1,825 feet. The Texas Company's No. 2 Rayne heirs is drilling at 3,746 feet.

Calcasieu Parish

Rex Petroleum Co. has abandoned No. 1 Ecker Edgerly, after hitting salt water at 3,731 feet. Davis & Walker's No. 1 Lyons also still is standing after finding salt water at 3,739 feet. Edgerly Petroleum Co.'s No. 11 Vincent is drilling at 3,475 feet. Green Oil Co.'s No. 9 Moore is drilling at 2,315 feet. C. M. Crotty's No. 7 Lillard is to be put on the pump. Rex Petroleum Co.'s No. 6 Hunter is being pumped but no reports have been made as to its productions. This is an old well worked over. The latter company also has a rig up for No. 8 Hunter. Wilson-Broach have shut down No. 6 Wilson after drilling at 2,590 feet.

On the Starks Dome, Gulf Refining Co. is drilling at 3,586 feet in No. 9 Industrial Lumber Co. on the southwest flank of the dome and has a rig up for No. 8 Lutcher-Moore Lumber Co. on the north flank.

At Lockport, Vacuum Oil Co. and Gulf Refining Co. have completed another good well, the No. 3-A Farquahar flowing 1,300 bbls. of fluid of which approximately 55 per cent is oil. Production is from a sand at 4,413 feet and is flowing through a quarter-inch choke. These operators also are swabbing No. 4 Bayou D'Inde State, which is in a sand at 4,418 feet. This well was swabbed to 4,000 feet and the fluid, 40 per cent oil, rises 50 feet an hour. Screen and liner also have been set in No. 5 Farquahar and the test is being washed and plug is being

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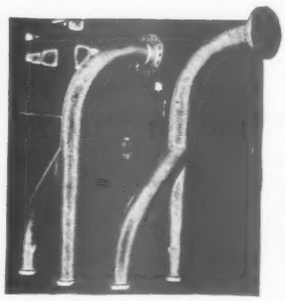

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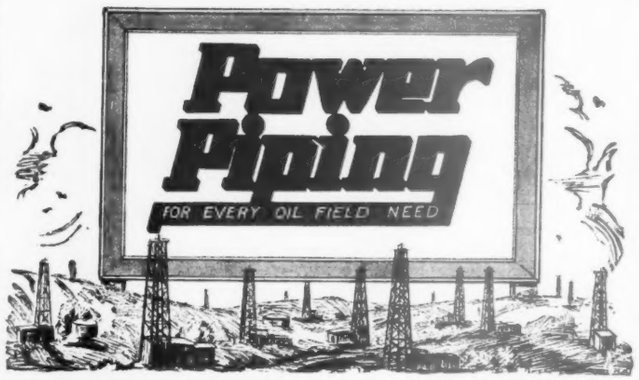

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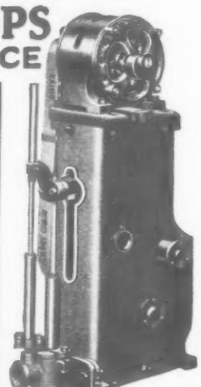

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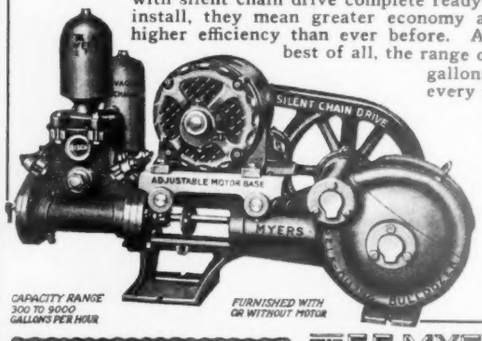
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drilled at 3,237 feet in No. 19 Miller. The latter encountered a fair showing of oil at 3,224-34 feet. No. 3 Farquahar is fishing at 4,399 feet and No. 1-A fee is drilling gumbo at 4,349 feet. No. 2 Frieber & Wolf is down 5,963 feet at which depth the test is waiting on repairs to the equipment.

Between Lockport and Lake Charles, Newton Drilling Co.'s No. 1 Dupree wildcat is drilling gumbo at 2,712 feet

At Vinton, Vinton Petroleum Co.'s No. 9 Gordon is being sidetracked at 2,750 feet. This company's No. 48 Gray tested salt water at 2,830 feet and has been shut down.

Cameron Parish

Calcasieu Oil Co.'s No. 1 Olevia at East Hackberry is drilling at 3,759 feet. This company has a rig up for No. 1 Watkins and is building a derrick for No. 1 Boiron. C. O. Noble and associates' No. 1 Ellender is drilling sand and shale at 1,410 feet. In this hole 609 feet of 10-inch surface casing was run. Yount Lee Oil Co. has a rig up for No. 6 State. The latter company's No. 7 School Land in the old Hackberry district is drilling gumbo at 2,265 feet.

Louisiana Land & Exploration Co.'s No. 1-A Calcasieu Lake is drilling sand and gravel at 1,210 feet.

At Sweet Lake, Pure Oil Co.'s No. 4 Sweet Lake is drilling hard sand and lime at 5,356 feet. No. 5 Sweet Lake is in hard sand at 5,263 feet.

Miscellaneous

Eunice Welch Oil Co. has a rig up for No. 1 Welch on the Chacahoula Dome in Jeff Davis Parish. Roxana Petroleum Corp.'s No. 1 Wilbert at White Castle, Iberville Parish, is in sand and gravel at 1,578 feet and preparations are being made to set 9⅝-inch casing. Union Sulphur Co. has started drilling at No. 1 Schwing, Bayou Blue Dome, Iberville Parish, and is down around 200 feet. Ohio Oil Co. has a rig up for No 2 Burke, St. Martin's Parish. Also in St. Martin's Parish, Rycade Oil Corp. has spudded in No. 2 Atchafalaya and is fishing at 3,916 feet in No. 1.

CANADIAN FIELDS

(Continued from Page 53)

light crudes of the Turner Valley, but of a better grade than that encountered by the Calmont test in the higher levels.

McLeod Oil Co. No. 1, LSD 16, Section 1-20-3w5, has 1,200 feet of oil in the hole with a small gas flow. Casing has been run to the bottom at 3,145 feet.

Turner Valley Production

The latest production summary for the Turner Valley Field shows the following estimates. In the crude naphtha wells producing from the Madison limestone there is considerable fluctuation, due to weather conditions and the intermittent freezing of some of the wells.

	Barrels
Crude naphtha producers:	
Royalite Nos. 1 to 3	10
McLeod No. 2	40
Illinois-Alberta No. 1	107
Vulcan Oils No. 1	110
Royalite No. 4	600
Royalite No. 7	23
Total	890
Crude oil producers:	
McLeod No. 3	40
New McDougall-Segur No. 1	45
New McDougall-Segur No. 2	50
Dalhousie No. 5	50
Total	185

This makes a total of over 1,000 bb'ls. not including a potential production of 100 bbls., part crude oil and part crude naphtha, from the Home No. 1, or a potential production of from 50 to 85 bbls. from Spooner Oils No. 1. Definite figures as to what Home No. 1 can do are not yet available, and Spooner No. 1, with the potential recovery indicated, is being drilled deeper for larger production.

Royalite Operations

Royalite Oil Co. No. 6, LSD 16, Section 31-10-2w5, is at about 3,450 feet and repairing derrick. Royalite No. 8, LSD 9, Section 12-20-3w5, is at 2,636 feet and rebuilding derrick destroyed by fire. Royalite No. 9, LSD, Section 13-20-3w5, is at 2,492 feet and drilling. Royalite No. 10, NE Section 12-20-3w5, is drilling at 2,021 feet. Dalhousie Oil Co. No. 6, LSD 10, Section 13-20-3w5, is at 4,517 feet and preparing to install new boilers. Home Oil Co. No. 2, LSD 14, Section 20-19-2w5, is at 3,157 feet and retubing the boiler. In the north end of the field, Foothills Oil & Gas Co. No. 1, SW Section 26-20-3w5, is at 3,498 feet and underreaming.

British Dominion Oil Development Corp., LSD 4, Section 5-20-2w5, is at 6,140 feet and resuming drilling after running casing to 6,130 feet. The formation is reported standing up well, and if this condition continues a stretch of open hole may be drilled. Results at this test, which is now the deepest in Canada, will probably determine the future of the Big Chief Oil Co. test in LSD 3-4, same section, which has for some months been standing at 4,370 feet. These two tests are not far from the central group of Turner Valley producers, but the British Dominion has apparently not yet reached the top of the Madison limestone, in which horizon the main crude naphtha production is secured. British Dominion, which is in good shape for much deeper drilling, should get the lime at a low point on the outer flank of the main structure. Vulcan Oils No. 1, which proved to be located in a deep syncline between the two folds of the structure, got wet gas and crude naphtha from the Madison lime at 5,004 feet. The British Dominion, on the outer flank of the structure, is now much deeper than Vulcan No. 1 was when it got production; though it is approximately the same distance south and east of Royalite No. 4 that Vulcan No. 1 was north and west. Royalite No. 4, near the crest of the western fold, got its big wet gas and crude naphtha production at 3,740 feet, after getting the top of the Madison lime at 3,510 feet.

In the north end of the Turner Valley, Stockmen Oils No. 1, LSD 1-2, Section 27-20-3w5, is shut down pending complete recovery of the men who were burned in the recent derrick fire. Work will likely be resumed on finishing the well about the middle of January when a temporary derrick will be built to pull the 12½-inch casing. A smaller string will be cemented above the gas producing level at which the well will be finished, and the hole below will be left open. Stockmen No. 2 will be spudded in as soon as No. 1 has been put in production as a gasser. No. 2 has been tentatively located in LSD 7, Section 27-20-3w5, this being the old Henderson Oils No. 1, taken over some time ago by Stockmen Oils, Ltd.

Resumed Drilling

Okalta Oils No. 1, LSD 1, Section 1-20-3w5, has resumed drilling at 4,400 feet after underreaming to that depth. Okalta No. 2, LSD 8, Section 1-20-3w5, which has a small Dakota sand production at 2,774 feet, has been cleaned out and will be put on the pump. The oil, which is a fairly heavy crude, will be sold to the Royalite and Dalhousie outfits to be used at wells now drilling. After the accumulation, about 100 bbls. has been pumped, the Okalta No. 2 should make around 8 bbls. a day. The well was taken over by Okalta Oils, Ltd., from the old Indiana-Alberta Oil Co.; and when Okalta No. 1 is finished, Okalta No. 2 will probably be drilled to the Madison.

Seneca Oils, LSD 1, Section 34-20-3w5, which recently got a fair show of crude oil at around 3,600 feet, has resumed drilling at 3,648 feet after running 8¼-inch casing to the bottom of the hole.

Sentinel Oils, Section 8-20-2w5, is reported drilling at 3,280 feet, with 12½-inch casing down to 3,250 feet.

The Dallas Oil Co. held its annual shareholders meeting at Calgary recently when the following officers were re-elected: President, Fred Johnston; vice president, William Motherwell; managing director and secretary-treasurer, A. G. Clarke; directors, H. G. H. Glass, Dr. William Hackney, Dr. A. B. Singleton, Col. W. S. Featherstonhaugh, H. W. White, A. C. Hagen. Dallas Oil Co. No. 1 in LSD 11, Section 20-19-2w5, was abandoned at 3,100 feet after drilling into a fault; and though No. 2 was spotted in the same LSD, no further

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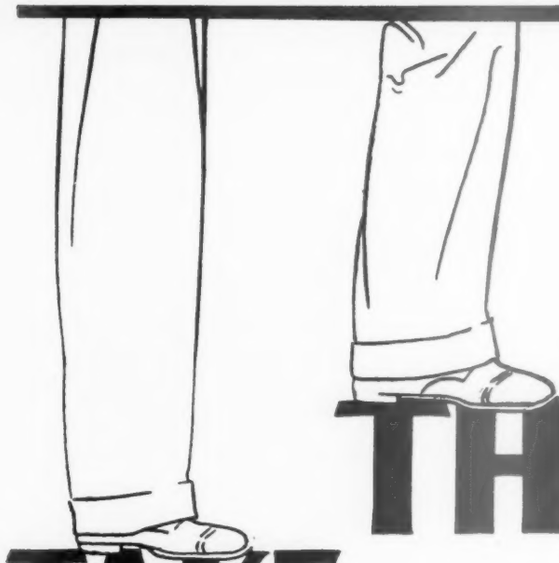

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work has been done owing to difficulty in financing. Since then developments in the southwestern end of the field, especially at Home Oil Co. No. 1 and Dalhousie Oil Co. No. 5, have thrown new light on the possibilities of the Dallas acreage, and a new No. 2 location will probably be made offsetting the Home No. 2. In addition to its original 1,340 acres, chiefly in the Turner Valley, the Dallas Oil Co. has secured some 1,400 acres on the Milk River structure in southern Alberta, a 120-acre block in the Manyberries district, and a third interest in some acreage in the Moose Mountain district. The potential value of these various holdings will be indicated by tests now being drilled by other companies. No new development work will likely be undertaken by the Dallas company in the Turner Valley Field till drilling by other companies on adjacent acreage has shown definite results.

Charters Struck Off

A number of companies holding Alberta charters have recently been struck off the provincial register of join stock companies. These include the Calgary-Edmonton Diamond Drill Contracting & Development Co., Ltd., and the J. Osage Oil Co., Ltd. (N. P. L.). The Southern Alberta group, once prominent in the Turner Valley development, has also passed finally out of existence with the striking off of the Southern Alberta Oil Co., the Alberta Southern Oil Co. and the Southern Alberta Refineries, Ltd., in connection with winding up proceedings following the taking over of the Southern Alberta interests by the Dalhousie Oil Co.

The southern Alberta Oil Co. venture was one of the great epics in the early history of the Turner Valley Field. About the time the famous Dingman discovery well, in October, 1913, struck its first show of light crude at 1,572 feet, two practical oil men, William Livingston and J. D. Pugh, organized the Southern Alberta Oil Co. They had, indeed, interested themselves in the Turner Valley before the first Dingman strike. The Southern Alberta Oil Co. was modestly capitalized in comparison with the numerous boom companies of 1913-14; and most of the money was put up by the two backers. While more aggressive promoters were selling stocks in companies which never reached the drilling stage, Livingston and Pugh kept on quietly drilling. They had secured no results when the outbreak of the great war in 1914 brought the swift collapse of the Calgary boom. However, they continued to drill, without any great flourish of trumpets and despite the fact that, except for the spectacular performance of the Dingman No. 1, nothing even remotely approaching commercial production had yet been found in the Turner Valley.

It was not till 1915 that, at a depth of 3,527 feet, the Southern Alberta No. 1 flowing well came in. The well came in unexpectedly, caught fire and the tools were lost in the hole. The flush production has never been definitely determined; as high as 1,500 bbls. was claimed, and it may actually have reached as much as 500 bbls. for the first few days. The settled production was around 50 bbls. of light crude. It was, however, the first commercial production in the Turner Valley Field, and for many years the only commercial production there.

Subsidiaries Organized

Following the strike at Southern Alberta No. 1, two small subsidiaries were organized, the Alberta Southern Oil Co. and the Southern Alberta Refineries, Ltd. The first was a drilling company, and the second constructed and operated a small topping plant, to which a wax plant was ultimately added. The light crude was chiefly gasoline, and the Southern Alberta Refineries, Ltd., secured tank cars and distributed its production to a number of communities in southern Alberta. The Southern Alberta Oil Co. enjoyed the distinction of being the first Calgary oil company to pay a dividend; in all some two or three dividends were paid, as well as one or two by the refining company. The Southern Alberta Oil Co. drilled a No. 2 well which ended with a string of tools in the hole, and the Alberta Southern Oil Co. also started two tests, one abandoned and the other ultimately a small producer, reputed to make up to 10 bbls. a day. Until the Royalite Oil Co. entered the Turner Valley Field, the Southern Alberta venture was the most successful producing enterprise in Alberta.

After some years the production of Southern Alberta No. 1 began to peter out. Outside capital had been enlisted, and organized a holding company, the Southern Alberta Oils, Ltd., organized. Later, litigation developed between the various groups of shareholders. Ultimately the Southern Alberta and Royalite Oil Co. interests got together, and a new Imperial Oil, Ltd., subsidiary, the Dalhousie Oil Co. was organized, in which the Royalite company held a controlling interest. The Dalhousie Oil Co. took over the various Southern Alberta enterprises, which have since been wound up. The new owners attempted to deepen Alberta Southern No. 1 producer which had eventually to be abandoned owing to drilling difficulties; Southern Alberta No. 2 is shut down and practically abandoned, and the old Southern Alberta No. 1 flowing well, 10 years ago the most spectacular and most hopeful feature of the Turner Valley Field, is now being deepened to the Madison limestone as Dalhousie Oil Co. No. 1. It should, within a few weeks, be once more in production. Under the new management the Dalhousie Oil Co. is one of the most active factors in Turner Valley development, holds a large amount of acreage, and has three tests actively drilling, with several more to start in 1928.

Action Dismissed

Litigation of considerable importance to a number of companies operating in the Turner Valley Field was dealt with recently when the appellate court dismissed the appeal of R. H. Stuart of Toronto in his action against the C. & E. Railway. Stuart sued for a declaration that he was the owner of petroleum and natural gas rights on the property on which Royalite Oil Co. No. 6 test was being drilled, claiming that the mineral rights passed to him when he acquired the surface rights. Mr. Justice Boyle dismissed the action; and his decision has now been upheld by the Appellate Court.

In the southern foothills, Imperial Oil, Ltd., Highwood No. 1, LSD 3, Section 36-18-3w5, is at 3,612 feet and waiting for cement to set.

On the Morley Indian Reserve, Wabash Oils, Ltd., has installed a diamond drilling outfit and is now drilling in the lower Kootenay formation at 350 feet, after casing off the oil and gas showing encountered at higher levels.

In the Buffalo Lake district not far from Stettler, Cardinal Oils is building derrick for No. 1 well in LSD 1, Section 28-40-19w5. The company is financed largely by people in the Stettler district, and the test will likely spud in early in the spring of 1928.

Drilling operations in southern Alberta have been materially handicapped by severe cold weather, but with milder weather there has been some resumption, though a number of tests will likely remain shut down till spring.

Skiff Field

In the Skiff Field, Devenish Petroleum No. 1, LSD 5, Section 27-5-14w4, is installing the pumping outfit, which was moved to the well site by sleigh from the nearest rail point at Skiff. The well will be on the pump early in January, which will give some idea of its definite production, generally estimated at 250 bbls. a day or better. Some storage was provided at the well last fall, when for a short time shipments were made to the Imperial Oil, Ltd., refinery at Calgary. At that time the bailing production was reported at 250 bbls. a day.

In the Pincher Creek district, southwestern Alberta, the Mount Royal Oil & Gas Co., LSD 4, Section 7-6-1w5, has been shut down owing to severe weather, but will probably resume with milder weather. The outfit may run double tour. The drill is around 1,000 feet and

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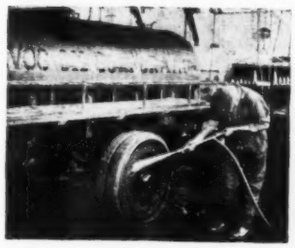

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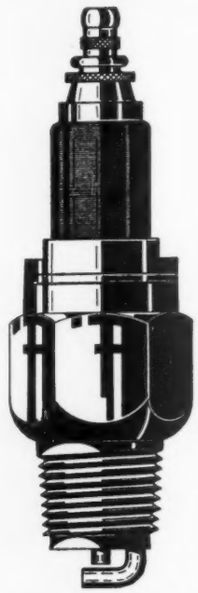

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within 500 feet of the first potential oil sand. Some difficulty has been experienced with the water supply freezing, the water being pumped from Mill Creek to the camp to top of the Coulee, a lift of 150 feet.

In the Warner-Milk River area, Gas Production & Transportation No. 1, NE Section 21-4-18w4, has resumed drilling. The drill is now in the Benton shale horizon below 2,000 feet and making ho e for 10-inch casing.

OKLAHOMA FIELDS

(Continued from Page 42)

Magnolia Petroleum Co.'s No. 1 Parker, NW cor. NE SW, Section 8-1s-5w, has been abandoned at 3,730 feet. Owen & Wood's No. 7 Massey, CNL S half SE NW, Section 12-2s-8w, is pumping 50 bbls. from sand at 2,084-2,100 feet.

Tulsa County

Enfisco Oil Corp.'s No. 1 Bruner, C E half NE, Section 14-17-13, is spudding. Transcontinental Oil Co.'s No. 2 Squire, CNL NW SE, Section 8 16-14, was completed for 15 bbls. in the Wilcox sand at 1,972-76 feet.

Wagoner County

Elk Drilling Co.'s No. 3 Barnett, NW cor. NE, Section 31-19-15, is dry and abandoned at 1,162 feet. Boyd & Hanks' No. 1 Pressley, NE cor. SW NW, Section 7-18-15, was completed for 20 bbls. in sand at 1,303-20 feet.

Pottawatomie County

Wilcox Oil & Gas Co.'s No. 1 Hollis, SW cor. Section 22-11-2, is dry and abandoned at 5,253 feet. Magnolia Petroleum Co.'s No. 2 Billington, SE cor. NE, Section 11-7-4, is pumping 64 bbls. from Hunton lime at 3,915-54 feet. Atlantic Oil Producing Co., Independent Oil & Gas Co. and Darby Petroleum Co.'s No. 1 Milburn, NE cor. NW NW, Section 15-7-4, Pearson Pool, has been shut in for 46,000,000 feet of gas in Hunton lime at 3,640-59 feet.

Seminole County

Barnsdall Oil Co. is building the rig for No. 6 Sango, NW cor. SW NW, Section 1-9-5, Earlsboro Pool. Twin State Oil Co. made location for No. 1 Swartz, SE cor. Section 10 9-7. Magnolia Petroleum Co. is building the rig for No. 2 Cruse, SW cor. SE SE, Section 2-7-6. Gypsy Oil Co. is building the rig for No. 1 Renton, NW cor. NE NE, Section 11-7-6, Little River Pool. Shaffer Oil & Refining Co. is building the rig for No. 1 Isaacs, NE cor. SW, Section 13-5-5. Louisiana Oil Refining Co. has the rig on the ground for No. 3 Reed, SE cor. NE NE, Section 18-5-8, Allen Pool. The Prairie Oil & Gas Co. is building the rig for No 1 Garman, SE cor. SE, Section 22-8 8. Rig material is being moved in for No. 1 Varnum, NW cor. SW SW, Section 5-9-6. Location has been made for No. 1 Chilcoat, SW cor. SW SW, Section 25-8-6, Bowlegs area.

Shaffer Oil & Refining Co.'s No. 2 Clark, NW cor. SE SW, Section 1-9-5, Earlsboro Pool, has been completed for 477 bbls. in Wilcox sand at 4,419-26 feet. Gypsy Oil Co.'s No. 12 B. Carter, SE cor. NW NW, Section 11 9-5, made 992 bbls. from Wilcox sand at 4,448-73 feet. Barnsdall Oil Co's No. 4 Wasutke, SW cor. NE SW, Section 12-9-5, had Wilcox sand at 4,396-4,408 feet and made 313 bbls. by swabbing. Roxana Petroleum Corp.'s No. 4 Strothers, NW cor. SE, Section 3-9-6, Searight Pool, topped the the Wilcox sand at 4,275 feet, drilled in to 4,287 feet and made 1,421 bbls.

Magnolia Petroleum Co.'s No. 1 Vanbuskirk, SE cor. NW SE, Section 9-8-6, Bowlegs Pool, produced 575 bbls. initially from Wilcox sand 4,225 28 feet. Indian Territory Illuminating Oil Co.'s No. 7 Fay, NE cor. SE NW, Section 13-8-6, was completed for 151 bbls. in Wilcox sand at 4,261-75 feet. Producers & Refiners Corp.'s No 2 Dungan, SW cor. NW SE, Section 35-8-6, Little River Pool, is dry and abandoned at 4,514 feet. Carter Oil Co.'s No. 3 Fish, NE cor. NW SW, Section 36-8-6, pumped 65 bbls. from Wilcox sand at 4,400-01 feet. Snowden & McSweeney's No. 1 Tiger, NW cor. Section 13-7 6, had an initial production of 100 bbls. pinched in, flowing from Wilcox sand at 4,315 feet.

LOUISIANA-ARKANSAS

(Continued from Page 44)

Louisiana Gas Co. has derrick pattern on location for No. 1 Bain, 660 feet north and east SW cor. NE, Section 31-23-12. OBrien Brothers' No. 1 Farrington, Section 21-23-12, is drilling at 2,500 feet. Woodley & Collins' No. 3 L. & A., Section 15-23-12, is shut down at 3,107 feet, where they were coring sandy shale.

Elm Grove and Sligo: C. F. Davis is drilling at 600 feet on No. 5 Simpson, Section 14-16-12. J. S. McCullough's No. 5 Hodges, Section 25-16-12, is shut down at 900 feet for repairs to rig.

Caddo Parish

Greenwood: Ferguson and others cemented 6-inch casing at 1,832 feet on No. 2 Abney, Section 7-17-16, and have rig up to drill No. 3, 2,016 feet south and 324 feet east of NW cor., same section. Magnolia Petroleum Co. has temporarily abandoned No. 1 J. W. Furrh, Section 28-18-16, at 1,983 feet, where it was coring shale at last report; No. 1 John Furrh in Section 32-18-16, is coring lime at 2,708 feet. Waterman Brick & Tile Co.'s No. 1 Waterman, Section 18-17-16, is drilling at 2,300 feet.

Mooringsport, Oil City, Hosston and Vivian: Bee Oil Co.'s No. 1 Muslow, Section 29-20 15, is drilling at 950 feet. W. D. Chew's No. 6 State, Section 34-21-16, is a derrick. Standard Oil Co. is waiting on standard rig to pump No. 1 J. J. Hart, Section 34-21-6, total depth 1,839 feet, in 24 feet of sand from which it came in last week following by heads with an estimated 125,000 feet of gas. No. 191 Stiles in Section 27-21-16, began drilling December 20 and is drilling at 1,334 feet.

Pine Island: Dixie Oil Co. is drilling lime at 3,821 feet in No. 9 Clark, Section 14-21-16; No. 9 Caddo Mineral Lands, Section 23-21-15, is waiting on standard rig at 3,909 feet, after swabbing a little oil and salt water last week at that depth. No. 90 Dillon, Section 14-21-15, is coring at 3,875 feet and No. 92 Dillon in Section 13-21-15, is drilling at 3,301 feet. No. 1 D. A. Huckaby, Section 33-22-15, is drilling chalk at 1,515 feet and No. 4 H. H. Huckaby, Section 11-21-15, is drilling chalk at 1,515 feet and No. 4 H. H. Huckaby, Section 11-21-15, is setting 8⅛-inch casing at 3,662 feet.

Gulf Refining Co. is waiting on standard rig to pump No. 14 Tyson, Section 14-21-15, total depth 3,939 feet. Magnolia Petroleum Co.'s No. 8-A Hampton, Section 15-21-15, is coring shale at 3,625 feet; No. 22 Robertshaw, Section 23-21-15, is drilling lime at 3,370 feet. Ohio Oil Co is drilling hard lime at 5,647 feet in No. 25 E. K. Smith, Section 12-21-15. Palmer Corp.'s No. 1 Sellington, Section 17-21-14, is fishing for 100 joints of 4½-inch casing, total depth 4,395 feet.

The Texas Company is arranging to put No. 50 Caddo Mineral Lands, Section 23-21-15, on the air, total depth 3,910 feet, after setting 4½-inch casing with packer to shut off salt water from a leaky string of 6¼-inch pipe. No. 51 Caddo Mineral Lands in the same section is waiting on standard rig, total depth 3,942 feet; No. 8 A. Herndon, Section 14-21-15, is drilling lime at 3,285 feet; No. 9, same lease and section, is drilling hard lime at 2,439 feet; No. 10 Herold, same section, has cemented 6¼-inch casing at 3,850 feet, total depth 3,925 feet. No. 10 Mabry, Section 15-21-15, is arranging to blow with air, total depth 3,930 feet. No 19 D. H. Raines, Section 15-21-15, is shut down in lime at 4,207 feet waiting orders.

DeSoto Parish

American Controlled Oil Co. is drilling at 2,685 feet on No. 2 Lanier, Section 5-11-11.

Monroe District

Morehouse Parish: Consolidated Carbon Co. is drilling at 1,670 feet on No. 1 Perry, Section 14-20-4. C. E. Jordan has shut down No. 1 Southern Carbon Co., Section 14-20-4, at 164 feet. The Texas Company began drilling No. 1 Myers, Section 15-22-7, December 22, and has set 12½-inch surface casing at 284 feet.

Ouachita Parish: Palmer Corp. is

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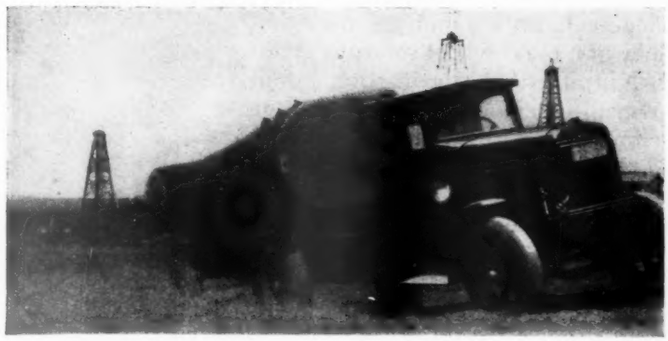

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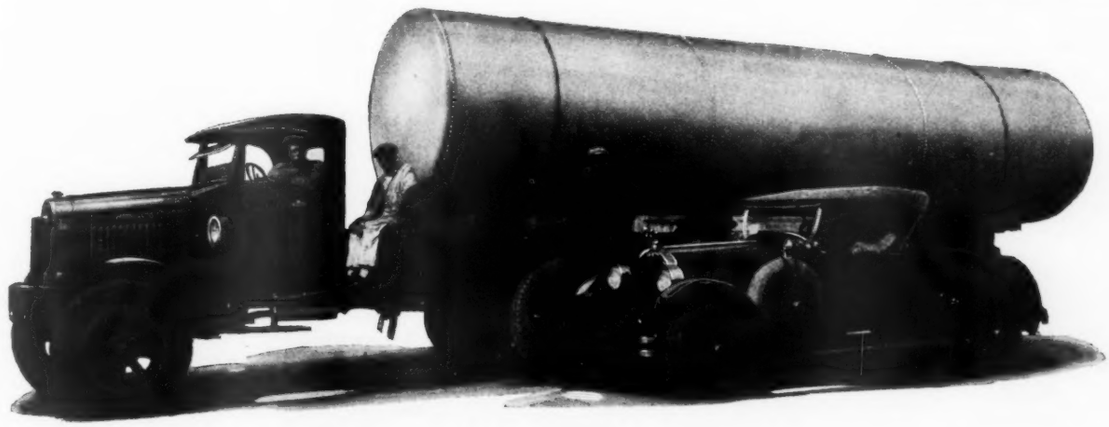

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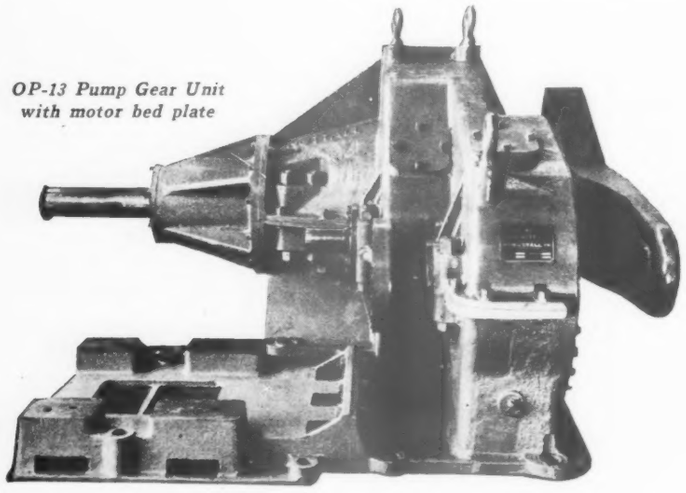

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drilling No. 1 West Virginia Timber Co., Section 5-18-4, at 1,009 feet. United Carbon Co.'s No. 1 Nelson fee, Section 6-19-5, at 1,720 feet. West Virginia Oil & Gas Co. is drilling 6-inch plug at 2,138 feet on No. 5 fee, Section 5-18-4.

Union Parish: Natural Gas & Producing Co. has rig up to drill No. 1 Waldrop, Section 7-21-3, and John Potts has rig up to drill No. 1 Bernstein, Section 30-20-4.

Red River Parish

J. H. Askew is drilling No. 3 Richardson, Section 25-13-11, at 1,800 feet.

Richland Parish

F. M. Fuller has made location for No. 1 Boise, 660 feet south and 330 feet east NW cor. Section 33-11-6. Moody & Seagraves began drilling No. 1 Hatch, Section 34-16-5, December 23, and have set 15½-inch casing at 180 feet; No. 2-B Hemler, Section 6-15-6, is drilling 6-inch plug at 2,283 feet and No. 1-C Hemler, Section 29-16-6, cemented 10-inch casing at 910 feet; No. 1 McDonald, Section 9-15-5, has rig up ready to drill and No. 1 Osborn, Section 14-15-5, is drilling 6-inch plug at 2,292 feet. Natural Gas & Fuel Corp. began drilling No. 1 Carter-Phillips, Section 9-16-6, December 27, and is below 100 feet; No. 1-A Thompson, Section 2-16-6, began drilling December 24 and has set 15½-inch surface casing at 212 feet. Ouachita Natural Gas Co. cemented 8-inch casing at 914 feet on No. 1 Cummings, Section 24-17-5. Ruston Drilling Co.'s No. 1 Sartor, Section 17-16-6, began drilling December 21, set 12½-inch casing at 178 feet and 8-inch at 886 feet. Stovall Drilling Co. cemented 6-inch casing at 2,283 feet on No. 1 Dunning, Section 26-16-6, and United Carbon Co. has rig up to drill No. 1 Mulkern in Section 20-16-6.

Sabine Parish

Seip and others' No. 1 Moore, Section 33-10-12, is drilling lime at 2,227 feet.

Webster Parish

Cotton Valley: Humble Oil & Refining Co. is drilling lime at 3,766 feet in No. 5 J. J. Babb in Section 14-21-10, and No. 1 Gray, Section 26-21-10, is in lime at 4,033 feet. Magnolia Petroleum Co.'s No. 1 G. W. Cole, Section 27-21-10, is drilling lime at 3,775 feet and No. 1 D. G. Cox, Section 22-21-10, is drilling shale and lime at 2,831 feet; No. 1 J. M. Mixon, Section 22-21-10, is in gumbo at 2,727 feet. Ohio Oil Co. has rig up to drill No. 38 Bodcaw in Section 15-21-10; No. 1 Crichton, in Section 21-21-10, began drilling December 22 and has 15½-inch casing set at 599 feet for another Trinity test.

Sarepta and Shongaloo: Magnolia Petroleum Co. has made location for No. 1 Camp in Section 36-23-10; No. 1 H. L. Munn, Section 29-23-9, set 10¾-inch surface string at 421 feet and is drilling at 581 feet; No. 1 J. L. Munn, Section 36-23-10, is rigged up ready to drill; No. 1 Roseberry, Section 29-23-9, is shut down waiting on casing at 2,707 feet. Northwest Louisiana Gas Co.'s No. 1 Munn, Section 29-23-9, tested 5,000,000 feet of gas at 2,725 feet but will go deeper.

ARKANSAS

Ouachita County

Smackover: Humble Oil & Refining Co.'s No. 4 Murphy, in Section 3-16-15, an old well being deepened, is drilling at 2,630 feet. Standard Oil Co., deepening No. 1-B Goodwin, an old producer in Section 5-16-15, is cementing bottom at 2,001 feet to get returns.

Stephens: Buffalo Oil Co. has cemented 6-inch casing at 2,010 feet in No. 3 Culp, Section 22-15-19, total depth 2,075 feet.

Union County

El Dorado: C. H. Allison has cemented 6⅝-inch casing at 2,154 feet in No. 10 Fitzgerald, Section 17-18-15. Grimes Brothers have cemented 6-inch casing at 2,207 feet in No. 9 Van Hook, Section 7-18-14.

Champagnolle: Garrett-Modisette Drilling Co. is cleaning out No. 1 Gregory, Section 10-17-14, total depth 2,765 feet. Eddy Jones drilled 6⅝-inch plug from No. 2 Crain, Section 2-17-14, at 3,010 feet, and is setting liner at 3,011 feet to test 2 feet of sand; No. 3, same lease and section, cored sand from 3,073-76 feet which showed oil, and is setting 6⅝-inch casing at 3,073 feet for a test; No. 4 is drilling at 2,620 feet. Magna Producing Co. has derrick pattern on location for No. 1 Rowland in the NW cor. Section 14-17-14.

Ohio Oil Co. has put No. 3 Crain, Section 1-17-14, on the beam at 2,996 feet but has not had a gauge of production from 8 feet of sand at 2,988-96 feet, which filled the hole 1,800 feet with oil. No. 5, same lease and section, is waiting on standard rig, total depth 3,056 feet, with 7 feet of sand; No. 6 tested dry in 4 feet of sand at 3,026-30 feet and is going deeper; No. 7 tested as estimated 5,000,000 feet of gas and a little oil on drill stem test of 5 feet of sand at 3,019-24 feet and is setting 6⅝-inch casing. No. 1 H. R. F. Good in Section 2-17-14, is drilling at 2,645 feet and No. 2 made a drill stem test at 3,048 feet and is making another at 3,052 feet in 3 feet of sand. No. 2 R. Pumphrey, Section 2-17-14, tested an estimated 3,000,000 feet of gas in 4 feet of sand at 3,014-17 feet, and is setting 6⅝-inch casing at 3,014 feet; No. 3 is drilling at 2,577 feet. Oilwell Corp. has rig up to drill No. 1 J. Dumas, Section 11-17-14, and also for No. 1 Townsend in Section 10-17-14.

Smackover: Lion Oil Refining Co. has set 10-inch at 106 feet and is drilling at 1,615 feet on No. 1 Leverette, Section 11-16-16; No. 7-B Murphy, Section 8-16-15, is drilling at 2,538 feet. C. E. Murdock is perforating casing at 2,110 feet on No. 2 Murphy, Section 17-16-15, total depth 2,770 feet.

EAST TEXAS

Harrison County

C. H. Lyons and others' No. 1 Furrh on the E. M. Jenkins Survey is drilling 6-inch plug at 995 feet. Magnolia Petroleum Co.'s No. 1 A. G. Vincent, James Bedford Survey, has rig up. A. L. Waller has rig up to drill No. 4 J. M. Bryson in the W. R. Anderson Survey.

Marion County

Holmes and others' No. 1 Bonham, in the Robert Potter Survey, is drilling at 2,000 feet.

Panola County

Bethany Oil & Gas Co. has set 101 feet of 10-inch surface casing and is drilling at 580 feet on No. 4 Burns, W. A. Birdsong Survey. H. Hines has rig up to drill No. 1 Jones in the G. Goodman Survey. Magnolia Petroleum Co.'s No. 1 Lila Fletcher in the B. C. Jordan Survey is drilling shale at 2,564 feet; No. 2 Jehu Jernigan in the Jane Thorpe Survey is on cap rock at 1,070 feet as is No. 2 Sol Oden in the E. F. Mitchell Survey, at 1,634 feet. The company's No. 1 J. M. Trosper, in the James Shadoin Survey, bailed to bottom and got a show of salt water with a little oil at 2,416 feet; No. 3 J. M. Trosper, same survey, began drilling December 21, set 13½-inch casing at 152 feet and is drilling at 1,000 feet.

Shelby County

Magnolia Petroleum Co. is coring No. 1 Pickering, W. J. Crane Survey, at 3,338 feet.

LA.-ARK. WILDCATS

(Continued from Page 44)

three joints of 6⅝-inch casing lost at 2,370 feet and resume drilling.

Moody-Seagraves are drilling No. 1 Whitesides in Section 16-9-7, Lee County, at around 2,100 feet, and will set 6⅝-inch casing at around 2,300 feet.

NORTH LOUISIANA

Bienville Parish

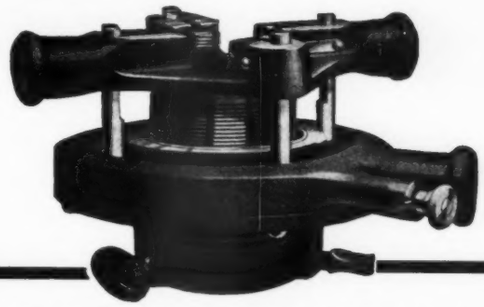
Louisiana Petroleum Co. is drilling No. 1 Hays, Section 18-16-5, at 2,590 feet.

Bossier Parish

Doern and others' No. 1 Bollinger, Section 9-22-11, is drilling sandy lime at 3,350 feet. Hamiter and others' No. 1 Hamiter in Section 10-23-13, is drilling 1,225 feet. Walker and others are drilling No. 1 Antrim, Section 28-22-13, at 2,650 feet.

Caddo Parish

Arkansas Natural Gas Co. has set 10-inch surface string at 202 feet and is drilling No. 1 Alexander, Section 20-16-15, at 700 feet. Belchic & Laskey's No. 1 Boynton & Croom, Section 11-18-16, is drilling at 500 feet. Greenwood Produc-



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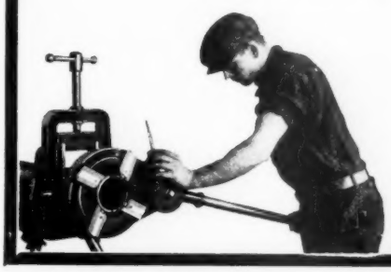

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tion Co. is coring No. 1 Cooper & Ellerbe, Section 15-18-14, at 2,527 feet. Tubbs and others' No. 1 Hines, Section 9-14-16, has cemented 6-inch casing at 2,268 feet. Woodley Petroleum Co. has cemented 6-inch casing at 1,911 feet in No. 5-B Knight, Section 39-15-12, and Woodley & Collins are arranging to test 16 feet of broken sand topped at 2,574 feet in No. 1 McVey, Section 23-19-14.

Catahoula Parish

Abandonment of two tests by the Lochnager Oil & Gas Co. left but one well drilling in Catahoula, Standard Oil Co.'s No. 1 Tensas Delta in Section 23-8-5, which is reaming to bottom at 2,557 feet in gumbo.

Claiborne Parish

Magnolia Petroleum Co.'s No. 1 C. C. Lee, Section 16-22-8, is drilling sandy shale at 4,807 feet.

DeSoto Parish

Benson Oil Co. has made location 1,120 feet north and west of the center of Section 3-10-13, for No. 2 Wolff, following completion of No. 1 as a 40-bbl. producer at 3,008 feet. Carlton Drilling Co. shut down No. 1 Stevens in Section 12-11-16, for the Christmas holidays at 1,000 feet. Dixie Oil Co.'s No. 1 Jenkins, in Section 7-12-11, is drilling lime at 5,907 feet. Foster and others are drilling lime at 1,850 feet in No. 1 Johnson, Section 7-10-13.

Sabine Parish

S. P. Borden and others topped the sand at 3,195 feet in No. 1 Logan, Section 36-10-12, and are coring at 3,212 feet. Dixie Oil Co.'s No. 1 Steinfeldt, Section 20-10-12, is drilling broken shale at 2,550 feet. W. G. Doerne has set 10-inch surface casing at 106 feet in No. 1 Pickering, Section 17-4-11. L. M. Emlet's No. 7 Bowman-Hicks, in Section 14-7-14, is coring lime at 3,585 feet.

West Carroll Parish

Palmer Corp.'s No. 1 White in Section 2-19-10, which tested salt water in 16 feet of sand from 2,450-66 feet, is drilling lime and chalk at 2,593 feet.

Winn Parish

Ohio Oil Co. is drilling No. 2 Rolen Acct. 1 in Section 5-12-1, is drilling at 3,309 feet. H. M. Roark's No. 3 Southern Minerals Co. in Section 19-11-3w, is drilling at 649 feet.

ARKANSAS

Bradley County

Johnson & Adams have shut down No. 1 Southern Lumber Co. in Section 12-12-12, at 2,204 feet after testing dry with no show.

Clark County

McKenzie and others are arranging to set 8-inch casing at 650 feet to test a show of gas in the top of the Nacatoch.

Columbia County

Sunny Jim Oil Co. is drilling gummy shale at 2,050 feet in No. 1-A Runyon, Section 3-16-21.

Lafayette County

Kensaw Petroleum Co.'s No. 1 Kensaw, Section 31-19-24, is reaming to the bottom, total depth 3,310 feet.

Miller County

Guest and others have shut down No. 1 Saunderson, Section 14-15-26, at 1,870 feet.

Nevada County

McDonald and others' No. 1 Pelt in Section 9-15-22, is drilling sandy lime at 2,315 feet.

Ouachita County

H. M. Harrell, trustee, has cemented 6⅝-inch casing at 1,595 feet in No. 1 Ponder, Section 18-12-17, total depth 1,614 feet.

Union County

W. R. Keever is drilling No. 5 Ezell, Section 12-17-15, at 1,855 feet. Lion Oil Refining Co.'s No. 1 Horn in Section 17-17-13, cored a salt water sand at 2,846 feet and a white sand at 2,928 feet and is drilling at 2,960 feet. Pitcher and others' No. 1 Arkansas Timber Co., Section 21-17-11, is drilling at 1,552 feet and Pitcher and White's No. 1 Kinard in Section 17-15-19, is drilling at 2,116 feet.

MISSISSIPPI

Monroe County

Amory Petroleum Co. is moving in rotary rig to side track cable tools lost at 2,270 feet in No. 1 Dill, Section 12-13-18. Transcontinental Oil Co. and The Texas Company's No. 1 Day in Section 18-16-18, has drilled through about 200 feet of fine gray sand, total depth 1,575 feet with one break of 15 feet of slate, and is arranging to set 8-inch casing between 1,500 and 1,800 feet.

EAST TEXAS

Cass County

The Texas Company has rig up for No. 1 Pruitt, 1,000 feet east and 300 feet south of NW cor. of W. S. Lissenbee Survey.

KANSAS FIELDS

(Continued from Page 42)

dle, NE cor. NW, Section 7-32-5, is a dry hole at 4,538 feet.

Greenwood County

Empire Oil & Refining Co. has the rig on the ground for No. 7 Demler, SW cor. NW NE, Section 25-22-12. Location was made for No. 8 Demler, SE cor. NW NE, Section 25-22-12. The rig is on the ground for No. 5 Ott "A," SE cor. NE NW, Section 25-22-12. Rig material was also moved out for No. 6 Ott "A," SE cor. NE NW, Section 25-22-12. The rig is under construction for No. 5 Schwab, SE cor. NW SE, Section 25-22-12. The rig for No. 7 Schwab is also being built at SW cor. NW NE, Section 25-22-12. Location has been made for No. 8 Schwab, SE cor. NW NE, Section 25-22-12. Eureka Oil Co. has the rig up for No. 1 Brothers, SE cor. NW, Section 35-23-11. Empire Oil & Refining Co. has a machine at the location for No. 1 Haggart, NW cor. SW NW, Section 9-25-13.

Empire Oil & Refining Co.'s No. 4 Garth, SW cor. NE NE, Section 22-22-11, was shot with 100 quarts and made 60 bbls. from sand at 1,887-1,916 feet. No. 3 Schwab, SE cor. NE NE, Section 25-22-12, made 230 bbls. after a shot of 240 quarts in sand at 1,687-1,734 feet. No. 1 Ott "C," NW cor. NE NE, Section 26-22-12, produced 135 bbls. from sand at 1,661-1,724 fee. Kanson Oil Corp.'s No. 1 Lamon, NE cor. NW NW, Section 30-22-13, is dry and abandoned at 1,790 feet. Empire Oil & Refining Co.'s No. 1 Kolb, NW cor. NE, Section 15-25-13, is a 25-bbl. well in sand at 1,427-35 feet, total depth 1,441 feet. Rogers and others' No. 1 Mills, SE cor. NW NW NW, Section 2-26-10, made 25 bbls. from sand at 1,960-85 feet. McGinnis and others' No. 1 Mills, NE cor. SW SW, Section 4-27-11, was completed for 100 bbls. in sand at 1,823-38 feet.

Marion County

Harwood & Winters' No. 1 Mott, SE cor. SW, Section 2-17-4, is dry and abandoned at 2,390 feet.

Rooks County

Krueger and others built the rig for No. 1 Poor, NE cor. Section 14-8-16w.

Russell County

Phillips Petroleum Co. and others made location for No. 1 Bungarth, SW cor. NW SE, Section 31-12-15w.

Sumner County

Champlin Oil & Refining Co. made location for No. 3 Love, NW cor. SW, Section 9-30-2. Roxana Petroleum Corp. has the rig up for No. 1 Stout, SE cor. NE, Section 24-31-2. Location has been made for No. 4 Taton, NE cor. SW NE NW, Section 36-31-2. Derby Oil Co. is building the rig for No. 3 Burkett, Block 88, Oxford Townsite, Section 14-32-2. Roxana Petroleum Corp. is erecting the rig for No. 1 Bussard, NW Tract 2, Oxford Townsite, Section 14-32-2. Location has been made for No. 1 Emerich "A," NE Tract 5, Oxford Townsite, Section 14-32-2. Wasson and others made location for No. 3 Gassoway, CNL SE SW, Section 14-32-2. Palmer & Barnsdall Oil Co. has a machine at the location for No. 1 Wenrich "A," NE cor. NW, Section 23-32-2.

Roxana Petroleum Corp.'s No. 4 Emerich, Tract 5, Oxford Townsite, Section 14-32-2, made 3,230 bbls. after shooting 80 quarts in sand at 1,994-2,105 feet. No. 7 Community, Lot 7, Block 38, Oxford Townsite, Section 14-32-2, made 75 bbls. from sand at 2,054-2,114 feet. Phillips Petroleum Co.'s No. 1 Nevitt, SE cor. NW, Section 24-32-2, has been abandoned at 3,204 feet.

CALIFORNIA FIELDS

(Continued from Page 56)

somewhat similar to that in use in the Los Cerritos section of the Long Beach Field where the Oil Operators, Inc., maintain a skimming sump and waste disposal system. The latter concern, incidentally, is erecting a new dehydrator to treat the oil recovered from the main sump and put it in marketable shape. It will be a rather simple process, the intention being to break up the emulsified oil by vaporizing the water content.

Midway-Sunset

Drilling operations in the Midway-Sunset area have been at a low ebb for several months and no appreciable change is anticipated until the expected flush production situation in southern California has passed. The Signal Gasoline Co. brought its No. 1 Whiston under control and this well, which had been running wild for several days, will be cleaned out and given a chance to make a bid for production. No. 1 Whiston, out in the Maricopa Flats near the Standard's Rass lease and the Union's Houchin property, was originally started by H. L. Whiston. Two new wells were completed over in the Belridge Field a few days ago and while neither resulted in large production they were commercially productive because of the shallow depth at which production was secured. The Carneros Oil Co. contributed both new wells and this company which has experienced considerable success with the property will undoubtedly start several new holes at once. The company's No. 83 in Section 30-28-21, resulted in a 120-bbl. pumper from 672 feet, while No. 84 started off doing 140 bbls. daily when put on the beam at 681 feet. The Belridge Oil Co. will probably list the next completion in this field as its No. 118 in Section 34-28-21, was down 1,720 feet a few days ago.

Northern California Wildcats

The Union Oil Co.'s No. 1 Tribe, in the Granite Canyon area, 3 miles southeast of the Mount Poso Field, ran true to form by showing an initial production of 275 bbls. daily from 1,781 feet. This well, a little less than a mile southeast of the General Petroleum's No. 1 Glide in Section 21-27-28, is producing clean 20.8 gravity oil. Geologists are still at variance as to whether these two wells have opened up a new field or merely extended the southern limits of the Mount Poso district. Alvin Tribe of Bakersfield, who drew the government oil permit on the property about a year ago in a land office drawing, is not worrying one way or the other. The General Petroleum has not yet concluded the production test on its wildcat, No. 1 Kerwin in the Edison district southeast of Bakersfield but something definite should be determined soon. The well failed to respond with a natural flow to bailing and swabbing operations of several days' duration and the company is making preparations to put this wildcat on a thorough conclusive pumping test.

The Pacific Eastern Production Co. will probably conclude drilling on its Union Avenue wildcat shortly to make a production test, although it is the intention to continue making hole as long as the present showings continue. The company may also be in a position to make a production test on its Fruitvale wildcat, a few miles northwest of Union Avenue, and this hole, which has had several rather encouraging showings of oil and gas, will be watched closely. Considerable leasing is still being done in southern Kern County, especially in the Edison, Fruitvale, Union Avenue, Greenfield, Comanche Point and Semitropic districts. The Shell, Standard, General Petroleum, Superior, California Petroleum, Union, Bankline, George F. Getty and Universal interests are all active.

Southern California Wildcats

There were no developments of special important in any of the wildcat sections being tested out in southern California with the possible exception of the Watson sector, where the White Behr Petroleum Co. landed a string of 11-inch at 3,990 feet. This wildcat, but a few hundred feet from the Pan American's Wilmington refinery and tank farm, logged a fair showing of oil and gas in the bottom of the hole and for this reason the production test will be watched with considerable interest. George F. Getty should begin actual drilling on his new wildcat at Fourth and Ocean Avenue in the city of Seal Beach within 10 days. This test, which is between the Huntington Beach and Seal Beach Fields, is a little over a mile southeast of production in the latter area. The Olympic Refining Co. has swung still further south and will drill a new wildcat near Sunset Beach, a short distance north of Huntington Beach. Several dry holes have been abandoned in this general vicinity, Leo Stein having gone down 5,163 feet, while the General Petroleum abandoned No. 1 Lomita as a dry hole at 5,465 feet.

The Associated is still drilling ahead in No. 1 Patterson at Rivera and, while several minor showings have been logged, there has been nothing of major importance noted. No. 1 Cypress at Potrero is still held up with water trouble and it begins to look as though it will take another well to determine the potentiality of this new field, opened by the Associated a few months ago. The San Clemente Oil Co. failed to effect a water shut off in its Hawthorne wildcat and drilling has accordingly been resumed. The Dominguez Extension Oil Co. has reentered its wildcat southeast of the Dominguez Field and the hole is being cleaned out preparatory to a resumption of work following a six months' suspension. The Petroleum Securities is rotating ahead in a hard sand at 4,360 feet in No. 1 Fairview, a wildcat in the Newport, Costa Mesa district south of the Huntington Beach Field in Orange County. The Mesa Petroleum's No. 1 Newport a few miles away was reported down 1,200 feet a few days ago with fair showings in the upper tar zone. The Monterey Park Petroleum Co., which has logged several minor showings in No. 1 Browning, a wildcat at Monterey Park, should begin picking up the pay very quickly if this test is to secure commercial production, as the oil sand is expected around the 3,800-foot level. This wildcat incidentally may bear watching as it may get production.

TEXAS LINE DOUBLES KANSAS CITY SUPPLY

KANSAS CITY, Mo., Dec. 31.—The supply of natural gas into Kansas City was doubled today by a new supply of 40,000,000 feet daily, through the opening of the 20-inch pipe line from the Panhandle of Texas to connect with the Cities Service Co.'s system at Wichita, according to officials of the Kansas City Gas Co.

Besides providing a greatly increased supply for industrial users here, officials of the company say the additional gas will give protection against a shortage affecting domestic consumers.

A new compressor station has been erected at Ottawa and the Petrolia station has been enlarged, it is announced, to increase facilities for pipe line service to cities in northwest Missouri, northeast Kansas and Kansas City.

The newly opened line is 267 miles long and ties on to the 12-inch and 16-inch lines that connect Wichita with Kansas City.

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Gas company officials said the new $750,000 pipe line within the city, which ties into the Cities Service lines at Seventy-first Street and the state line, feeding through to the Blue Valley industrial district, would benefit all domestic, house heating and industrial service in Kansas City. The new city line is a 24-inch main. More than 4,000 users of gas for heating will be benefited by the increased supply.

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Refiners and Marketers Set for 1928

Making Little Effort to Sell, but Devoting Attention to Annual Inventories and Adjustment of Disputed Accounts

By John B. Waldo

CHICAGO, Jan. 2.—The week between Christmas and New Years, as always, was quiet in the oil business. Buying was at a minimum and sellers found that the best policy was not to push for business. "We have done all the buying we shall do this year," was a common statement by distributors and the larger consumers. The sales actually booked were for immediate needs only and there seemed to be less willingness even to consider future business than is usual at this season of the year. Some of the leading refiners and marketers practically made no effort to sell, issuing instructions not to call up on the telephone for business unless by previous agreement.

Preparations were being made for annual inventory and many settlements of disputed accounts were made, most of them for unimportant amounts, which allowed a more complete closing of the books for the year with a clean slate for the beginning of 1928.

It may be that there have not been more than the usual number of errors in shipments recently and that the number has only seemed to be greater because attention has been directed to them in some way. Many mistakes seem to be due to carelessness. In one instance a sales manager called up a large buyer just to ask him if he had had a pleasant Christmas and found the customer wrathful because he had ordered one 8,000-gallon tank car and had been shipped two 10,000-gallon tanks. The sales manager assured him the order had been sent to the plant for one 8,000-gallon tank and told him not to worry but "just tell them to haul them out."

It does not sound serious, but considerable expense was caused by this bit of carelessness and the profit on car lots is not so large that such expenses can be incurred frequently. Yet such mistakes are common. If only one 10,000-gallon car had been shipped it might have been possible to induce the buyer to accept the delivery, but the seller knew that it would be impossible to prevail on him to take in the two cars at this time of the year.

Another Cause of Friction

Another and much more serious cause for friction between refiners and the purchaser of the products is that caused by the delivery of the wrong material or of inferior grades or the shipment of light products in dirty cars or any products in cars that contain water or settlings. There are many "accidents" of this kind. They suggest the statement credited to a candid refiner who explained a misshipment by the statement that "they sold what the customer wanted and shipped what they had on hand."

There are many instances of this kind that suggest that the refiner was speaking the truth about practices of many plants now and then.

There are some refining organizations which have such a reputation for delivering the exact product ordered that their regular customers hesitate to make any claim for outage or inferior product. This is one reason why such refiners hold their trade and usually get a better price than the buyer might have been asked by some other refiner of whose product and methods that buyer was less certain.

Not long ago a local manufacturer received a car of fuel oil and finding that the contents did not test up to specifications which were a part of the order complained to the refiner. The reply was that the sample retained at the plant showed that the contents of the car had such and such specifications. The buyer said in substance that the refiner might have retained a sample from some car or from some other shipment by that car but that he knew that any sample that indicated that the car received contained the grade of oil that he had ordered when it was delivered to him was a lying sample.

That car was rejected, the rest of the order canceled and a general row ensued that may be taken to the courts. Apparently the refiner believes that he was right and the buyer insists that the oil received was not the kind he ordered.

The gasoline demand last week was light although the consumption over much of the territory is still good for the season of the year. Good roads have made it possible to use the closed car except in localities where the snowfall is heavy. There is no longer the wide difference between the average February and August consumption of gasoline partly because of the better roads and closed cars and partly because of the greater use of automobiles in the South. But even with good consumption for the season of the year there was little buying and no large business. In fact there are few of the buyers left who used to come into the market for 50 and 100 cars for prompt delivery. They usually have contracts for their requirements and are thus tied to some one refiner if they are not actually owned or leased. There is little complaint made of the way that dealers are taking out their contracts although in some localities where the winter has been severe the shipments have been held back.

Price Level Maintained

The demand for the higher tests and for special antiknock gasoline has been sufficient to maintain prices on these at the level of the last several weeks. It was possible to buy for prompt delivery any wanted grade, but the higher gravities are not being pushed for sale. The U. S. Motor grade has dragged along at 5⅝ to 6 cents and sales have been made to Chicago distributors at prices less than 5⅝ cents although most of the selling has been done from differential points.

In Detroit and adjacent territory and all through Ohio low prices prevail on the basis of shipment from Group 3. The City of Detroit supplied its requirements at less than 5½ cents Group 3 basis and since then sales there have been made at close to 5¼ cents Group 3. One reason for these low prices is the practice attributed to Toledo refiners of making a very low price to certain distributors who will ship this surplus outside of the state.

Regarding the early January demand there are few oil men here who look for any great increase in the buying. A crude advance might start some buying but just marking up prices by refiners will not hasten jobbers to buy for their future needs. They know that the winter consumption will not be materially larger than it was a year ago, that there are more stations after that business and that there is much more crude and refining capacity than is needed or will be needed to supply all demand. If the dealers should buy early in the year in excess of actual gallonage they will simply carry that gasoline along until the demand comes to care for it.

Apparently the jobber has been able to adjust his purchases to his actual sales. He buys very nearly what his customers will buy from him. So far the trouble has been that the refiner has not been able to adjust his output to the quantity that his customer will require.

The natural gasoline market is very weak here. Some business has been done. Sales of grade AA have been made at 4½ cents locally and of Grade C at 3½ cents. There seemed to be a good deal of uncertainty regarding just what was the market price on a Group 3 basis.

Kerosene Demand Light

The kerosene demand was light all of last week. Early in the week jobbers refused to buy at 4¾ cents. In some cases they did not say that they had been offered kerosene at less than this price, but said that the market was so weak that they should be able to buy for less. In some cases sales were made at 4¼ cents and at the close of the week that price was becoming common although several refiners were still holding for 4½ cents. There have been accumulations of kerosene and several refining offices here have instructions to move as much kerosene as possible.

The export movement is no longer caring for the surplus. Distillates have held their own as to price and a fair movement was reported all of the week. Some distillate is moving as gas oil and some is being used for blending. The supplies are apparently ample and the price is still 4¼ to 4¾ cents for good 38-40 straw distillate.

Gas oil ruled firm all the week and the straw gas oil with a low cold test and other necessary qualities for a good furnace oil sells at the same price as distillate and is much more difficult to buy. In fact refiners state that their stocks of gas oil of all grades are not large. Even the straightrun gas oil is not freely offered and some refiners previously reported to have considerable quantities say they have none to sell when asked for prices. Others, according to their statements, have only moderate to small supplies. Some sales are reported to have been made to refiners operating cracking stills. Others who have such plants of their own are apparently holding for cracking later. The demand from distributors has been good but entirely for the zero oil, both amber and straw. The supply of the latter is closely held and not ample but blended oils are available with a fairly light color and generally desirable.

There is a difference of opinion regarding the demand for the light colored oils some refiners declaring that the general demand for the straw oils is less than last year while others state that they see no material change. That there is a steady demand sufficient to keep stocks at a level where prices favor the seller is a fact in the gas oil situation. Of course the quantity of zero straw 32-36 gas oil is limited and only a few sources of supply are available so the tendency of buyers is to get away from these light gas oils as far as is possible.

The demand for the zero gas oils of an amber or cherry color has also been good and prices for these are firm. In fact any zero oil is good right now. There have been some inquiries for future requirements from the gas companies which are not supplied for the season. Stocks with some of the major companies have been drawn on so that the outlook generally for the gas oil group is favorable especially as the time is at hand when real winter temperatures will be felt if they come at all this season. So far this city and its immediate vicinity have had little snow and cold weather.

The fuel oil market has been in a rut. Some of the best posted of the fuel oil men say that they do not look for a great improvement in the January business over December. The industrial outlook is better, especially in the steel and related industries, but it will take a little time for the results of this improvement to reach the fuel oil seller. The concerns specializing in the marketing of fuel oils report that they have had only a limited inquiry for future business and some of these inquiries are merely to enable the buyer to keep posted on the market. Such contracts as have come up for placement at the present time have been fought for and low prices secured in several instances by the buyers. Prices quoted for periods of 30 and 60 days have shown a lower value for the ordinary refinery fuel oil than prevailed at the beginning of last month. The same is true of prices quoted by refiners on the ordinary cold test oils.

The low cold test oils are in better demand and prices for these are maintained. Some of the distributors here are trying out the West Texas crude in the hope that it will take the place of Smackover oil which was largely used by them on account of its low cold test and other qualities that made it desirable for blending as a furnace oil. The specifications of the West Texas oil indicate that it has as low a cold test as Smackover with no greater sulphur content and that its gravity is some 10 degrees higher than the latter.

A large quantity of what is practically a topped McCamey crude has been sold here by a local refinery. The present price of this oil which has given good general satisfaction is 75 cents Group 3 basis. An added reason for its local popularity is that almost over night deliveries can be had. There is little Smackover coming to this market and the prevailing price is so much above the cost of Oklahoma fuel oil of the same gravity that only occasional buyers will pay the difference.

Lubricating Oils Inactive

Lubricating oils are rather inactive. One contract was placed by a large distributing organization for its requirements and the comment of the buyer was that the prices quoted were very low. The contract was widely distributed some going to a local refinery and other grades going to a coastal plant. The quality of the samples was stated to be superior. In fact, all were good oils but there was a wide range in the prices. There have been some inquiries from other sources for future business and more activity in the car lot market is looked for. The smaller deliveries to the distributors have been light, but some improvement is expected from the country trade after the inventory period is over.

There has been no general change in the tank wagon scale.

Adjustments have been made where prices have been returned to normal or at least increased from the recently prevailing low level. Some of these adjustments have been brought about by the state organizations, others through the efforts of local committees or even single individuals. There is a strong desire to iron out these local price cuts. In a great many places they have continued long enough to prove their utter uselessness permanently to increase the business of any individual price cutter over a period. At the start the price cutter may get some additional business but when the cut becomes more general the trade inevitably drifts back to the usual sources of supply and the price-cutter in-

(Continued on Page 129)

Eastern Market Situation Uncertain

Little Hope for Immediate General Improvement. Prices Still Low With No Reports of Changes Either Way

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Dec. 31.—The close of 1927 finds the eastern refined oil situation in a rather uncertain state with little hope for immediate general improvement. Prices are still low and the final week does not bring any report of changes one way or the other. The evident willingness of refiners to meet the present big demand for tank car products at current prices is of satisfaction only to buyers. Apparently the industry in this section is no nearer a scarcity of material than three or six months ago.

Even the export situation at the close of the year does not show any indication of an awakening from the lethargy which has been apparent for several months. There is a slight seasonal increase in volume due to the catching up on yearly contracts, but that is all.

Gasoline

With U. S. Motor gasoline available at practically all refineries for 8¼ cents in tank cars, the market remains in about the same position as a week ago, so far as the refinery situation is concerned. The demand for tank car material, however, is very heavy and it is of growing interest to the trade how even the Atlantic Seaboard plants, with their known large resources, can continue to handle the market at present low prices, and at the same time supply their own service station requirements.

Many big garages and trucking corporations, as well as department stores and other establishments operating a fleet of trucks, are obtaining their gasoline delivered for 10 cents or less per gallon because of their ability to handle tank car lots. The tendency in this direction on the part of large consumers is doubtless taking some business away from the service stations, although there is always a demand for gasoline on the road to replenish tanks on long hauls.

The retail price situation is also unchanged this week but one fairly large marketer came out with an ad offering a special gasoline for 18 cents a gallon retail. This company, it is understood, imports considerable crude for its local refinery. The usual price for other special gasolines now on the market is 22 cents, and for regular gasolines, 20 cents. The special gasoline mentioned will come on the market after January 1.

The volume of business being done in gasoline over the holidays has been extremely gratifying as a result of exceptionally good weather. Traffic on the roads leading out of New York, Boston and other large Atlantic Coast cities has been more like that of spring or fall than winter.

Kerosene

The kerosene market continues firm on the Atlantic Seaboard as a result of improved domestic consumption and fair export demand. It had been expected by some in the trade that water white would top the 7½-cent mark before January 1, but a survey of the situation indicates that it is still widely available at the 7½-cent figure. A report that 7⅝ cents had been paid for a large quantity purchased at a Bayonne refinery could not be confirmed.

Prime white kerosene is moving more freely into the export trade and is somewhat scarce for domestic distribution. However, the domestic demand is limited, most buyers demanding water white.

There have been more liberal tank car receipts of water white kerosene from the Mid-Continent during the past week, attributed by some to purchases by eastern refiners for the domestic trade. These may have been due to some material being on the market at a favorable price in the Mid-Continent territory.

A cold spell lasting several days boosted furnace oil consumption materially, and marketers are confidently awaiting replenishing orders which are expected to materialize early in January. Furnace oil is available to consumers at from 9½ to 10 cents, delivered in tank wagons.

Gas and Fuel Oil

While 28 plus gas oil is still being offered by leading eastern refiners in tank cars at 5½ cents, there is a growing disposition to hold this material for cracking purposes, especially the gas oil of 30 gravity or better, which has a somewhat higher gasoline content. More and more of the crude now coming in for refining is of a grade not capable of a very big gasoline yield, and therefore refiners are more disposed to tighten up on their cracking stock as well as higher grade crude oils. This may be in anticipation of an increase in cracking operations after January 1.

Diesel oil is enjoying the usual steady demand. Some of the 28-30 gas oil is finding its way into Diesel engine consumption. It is pointed out by some familiar with developments in Diesel engine construction that the newer engines are being built to use a slightly lower gravity oil—around 26-27 gravity.

Bunker fuel oil is quoted at $1.35 a barrel to the trade here, with lighterage 6½ cents a barrel extra. It is reliably reported that one buyer got a better quotation—around $1.30—for immediate delivery. The bunker fuel oil market still has a weak tone. Although the general belief is that the market is close to bottom there may be room for a further reduction of 5 or 10 cents below the present price of $1.35 if the tanker market continues in its present almost demoralized state. The market is now influenced most by Venezuelan oil which has come in here in record quantities during the past few weeks. It is reported Venezuelan oil has been laid down here in cargo lots at from $1.05 to $1.10 a barrel.

Many factors in the bunker fuel oil market are now wondering whether bunker oil will drop below the cost of crude, a development which actually occurred in 1921, when it was quoted in New York Harbor at 98½ cents a barrel. This depends largely on the volume of West Texas and Venezuelan crude available after the first of the year.

Lubricating Oil

Lubricating oil marketers report dullness over the holidays. The only outstanding feature has been improvement in bright stocks, which are reported a shade firmer. The demand for industrial lubricant is still below par, with contracts for 1928 smaller in some directions than those for 1927. The recent advance in price of Pennsylvania crude apparently has not stimulated the market for lubricants here to any extent.

That a slowing down in industrial activity in many directions has offset the gain in demand for lubricants in the motor trade is more and more evident. From this viewpoint of production, the market for lubricants is in good shape, and if the industrial demand were holding up, it is believed the entire price scale would be higher than it is.

Paraffin Wax

The paraffin wax market is still weak, although export shipments have been much more liberal. The domestic industrial demand is considerably restricted, especially for 130-132 and 135-137 a.m.p. refined wax.

Petrolatum

Little change can be recorded in the petrolatum market. Western Pennsylvania refiners are offering dark green and amber in fairly large quantities at prices slightly shading those at which eastern plants have been doing business, for instance dark green at 1¾ cents and amber at 3¼ cents. But on other grades, the market is holding exceptionally well. Plenty of lily white is moving at 8½ cents a pound, while cream is bringing 6½ cents. The market is still in the hands of sellers.

The Export Market

Local exporters are fairly well satisfied with the present situation. Gasoline continues to move into export channels in good volume, with bulk orders from principal European countries especially gratifying. While bulk orders for kerosene and lubricating oils are not so heavy, the demand for cased kerosene and barreled lubricants continues good.

An exceptionally favorable situation continues to exist in the paraffin wax export trade. Italy and Spain, whose stocks have been reduced by hand to mouth buying during the latter part of 1927, are beginning to come into the market on a much larger scale. Their purchases are largely restricted to refined wax. A considerable amount of refined wax is also moving to the Far East at the present time.

The export movement of crude scale wax is also satisfactory. The principal shipments are to Great Britain, and especially England.

Lubricating oils and greases are holding up well so far as export buying is concerned.

Bulk exports of gasoline for the week ended December 28 are estimated at 3,735,657 gallons, and of kerosene 1,470,000 gallons. Paraffin wax shipments comprised 1,537,360 pounds of refined and 208,050 pounds of crude. More than 531,900 pounds of lubricating grease were exported.

The price situation abroad continues unchanged.

New Refining Process

A new process for refining oils is reported from Germany. A short time ago the Dr. Bluemmer Crack-Anlagen A. G. was started in Berlin for the purpose of constructing continuous cracking plants for the distillation of residues, brown coal tar and schist oils by the Bluemmer process, said to be owned by the Deutsche Eerdoel A. G. Aside from its alleged yield of more than 50 per cent gasoline, the advantage of this process is said to be the indirect firing, which prevents the formation of coke in the heated parts and makes possible the utilization of brown coal tar or its distillates, or of brown coal primary tar, as well as schist oil. The largest yield is obtained from oils with a paraffin base. The process is described as producing a gasoline which differs from the usual distillation product by reason of its higher content of unsaturated and aromatic elements, said to cause the motor to run more smoothly and with less knocking than ordinary gasoline.

In Rumania, a steady increase in crude oil production is reported. Present output is running at the rate of 11,000 metric tons per day. The principal Rumanian refiners have concluded an agreement for the sale of oil products on the domestic market providing for sales quotas based on the present output of the refineries concerned and provision for fixation of prices on the basis of world market quotations.

In England, the sale of special gasolines on a larger scale than ever is reported. The Anglo-American Oil Co. is handling ethyl gasoline, a product of the Ethyl Gasoline Corp., on a small scale for racing automobiles, largely. Marketing of the product is expected to grow in 1928, however, for general use.

Advices to the Standard Oil Co. of New York from Tientsin, China, state that the fire in its refinery there has been extinguished through the assistance of military and naval forces. Losses are estimated at less than $300,000.

Spanish Monopoly

Protests have been lodged by the American, British and French governments with regard to the seizure of properties in connection with Spanish monopoly plans, according to advices from Washington. Meanwhile, American oil companies whose properties have been taken over by the monopoly are being assured of financial compensation. Spanish officials have assured them that valuation of property or products seized would begin immediately and that interest payments will be made on the entire property of the companies from the date of seizure and that compensation will follow as rapidly as possible. Spanish officials also assured the American charge d'affaires at Madrid that compensation would be generous

The Standard Oil Co. of New Jersey is the chief American concern affected, having had two of its plants, at Valencia and Alicante, taken over by the Spanish government monopoly. One other plant, at Malaga, largely American owned, has been seized.

Principal Exports

The following table shows principal exports of petroleum and petroleum products from New York during the last three weeks (all figures in gallons unless otherwise noted):

	Dec. 28	Dec. 21	Dec. 14
Gasoline:			
Bulk	3,735,657	1,922,579	12,825,939
Cases	221,250	1,525,980	242,690
Kerosene:			
Bulk	1,470,000	662,494	2,965,771
Cases	931,200	2,494,620	1,312,000
Lubricating oil:			
Bulk	.....	.....	447,972
Barrels	808,100	943,700	394,900
Cases	95,080	100,050	57,230
Lubricating grease:			
Barrels (lbs.)	531,900	102,600	.....
Paraffin wax:			
Bags (lbs.)	1,537,360	387,200	607,860
Barrels (lbs.)	208,050	3,237,125	1,394,600
Petroleum asphalt:			
Barrels (tons)	185	268	.....

The foregoing figures include all shipments of 500 bbls., 1,000 cases, or over.

Tanker Market and Movement

The oil tanker chartering market has become dull. Rates on the new fixtures reported, were about unchanged at the low levels.

New fixtures include the following:

Tanker Lustrous, United Kingdom-Continent from Curacao, 16s. 6d, from Gulf, 16s, from Abadan, 27s, clean, February loading.

Tanker Beta, Venezuela to north of Hatteras, 18½ cents a barrel, January loading.

Tanker Alpha, Venezuela to north of Hatteras, 18½ cents a barrel, January loading.

Tanker Huguenot, California to United Kingdom-Continent, 29s, March loading, gasoline.

Tanker Hampton Roads, Gulf to Boston, fuel oil, January loading, 21 cents.

Receipts of crude and refined oil by tank steamer at Atlantic Coast ports for the week ended December 28 amounted to 4,289,000 bbls., a daily average of 613,000 bbls, against 3,808,000 bbls., a daily average of 544,000 bbls., the week ended December 21.

Receipts from the Gulf Coast totaled 2,521,000 bbls, a daily average of 360,000 bbls., while receipts from the Pacific

(Continued on Page 137)

Charcoal Test for Gasoline Content

Gas Testing Committee of California Association Gives Tentative Specification of Pressure Method. Explain Operation of Apparatus

Gas Testing Committee, California Natural Gasoline Association.

The use of activated charcoal for testing and recovery of gasoline hydrocarbons in natural gas was initiated by George A. Burrell and G. G. Oberfell in the latter part of the year 1918. Much interest has since been evidenced in its development on an industrial scale and a company has been formed for exploiting it in this direction. However, its use as a testing medium has largely been left to the individual initiative of various gas engineers and parties interested in the laboratory end of the natural gasoline business.

Although the underlying principles are the same, owing to the general feeling that the procedure used in testing gas is strictly the business of the party treating it, the methods pursued in determining the gasoline content of natural gas are almost as many in number as there are persons using the test. In late years the economic value of the gasoline contained in natural gas has led to more and more attention being devoted to its efficient extraction. There are always two viewpoints or opinions as to what can be termed efficient extraction. One idea is held by the party selling the gas and another and oftentimes widely differing opinion is maintained by the party in whose plant the gas is treated. Recognizing the need for a standard method for determining the available gasoline carried by natural gas, the gas testing committee of the California Natural Gasoline Association selected what is known on the Pacific Coast as the pressure charcoal method as a medium on which to standardize.

Pressure Charcoal Method

The initial efforts of the committee, which is composed of representatives of all the larger companies engaged in the natural gasoline business in California fields, was toward agreeing on a tentative standard to act as a base from which to develop a standard procedure, and in the following outline it must be recognized as recommended as purely a tentative one, the various points of which will be thoroughly examined and carefully tested before it is recommended as a standard method. It naturally follows that the test as outlined tentatively is by no means the consensus of opinion of all the natural gasoline fraternity as to just what a test of this kind should be, representing only what in the opinion of the majority of the committee is a starting point from which a test may be developed.

A. Gasoline Absorption.

1. Apparatus:

(a) Sampling Device. Sampling device shall be used which will give a positive sample of the gas to be tested, without air dilution, conforming to the types listed below: (1) A vacuum-pressure type of pump, lubricated by means of an oil or fluid nonmiscible with gasoline such as glycerin or castor oil, etc., with suitable fluid separators on inlet and discharge. (2) An aspirator, or other suitable method, for pulling the vacuum gas through the metering device and charcoal tube. (3) A vacuum sampling can with suction created by water displacement.

(b) Gas Meter. Any accurate form of measurement by means of positive, displacement or orifice meter, allowing readings to the nearest hundredth of a cubic foot.

(c) Gas Drier. A suitable receptacle of not less than 250 cc. capacity containing granular anhydrous calcium chloride.

(d) Charcoal Tube. 1. Wet and dry gas; three-quarters inch I. P. by 30 inches overall length, of 260 cc. volume, exclusive of fittings. (Fittings on each end optional.)

(e) Control Apparatus. 1. Thermometers (gas and temperature rise.) A type shall be used, graduated to read in 1 degree Fahrenheit divisions, or less, and of a range suitable for the temperature encountered.

2. Manometer. A suitable manometer shall be used for indicating the pressures under which the gas is metered to within an accuracy of 1 inch of water.

II. Procedure.

(a) Sampling. The gas to be tested shall be taken from the source in such a manner as to represent a true sample, and passed through a scrubber to remove entrained matter. Under vacuum conditions, an Orsatt test is recommended to determine air leakage.

(b) Metering. At least 4 cubic feet of gas shall be allowed to pass through the metering device to purge it to insure freedom from contamination by gas remaining from previous tests. After this has been accomplished, the Orsatt test, recommended above, together with a sample for the determination of specific gravity may be taken. When positive displacement meters are used, the gas temperature thermometer shall be located as near as possible to the meter outlet and the static manometer located as near the inlet as possible. Readings shall be taken at cubic foot intervals to determine the average flow temperature and meter pressure. With the orifice type meter, static, differential pressure and temperature readings shall be taken at cubic foot intervals, and at the same positions on the setup as used when calibrating the meter.

(c) Drying. The drying device should consist of a metallic container, containing granular anhydrous calcium chloride, placed on the discharge of the metering device and provided with a means of preventing saturated calcium chloride from injuring the meter, or contaminating the charcoal.

(d) Testing. The meter having been bypassed, a sample tube, containing dry charcoal with a minimum of 40-minute activity by modified chloropicrin test, given under Article "C," shall be used, and which has been jarred to insure proper distribution, is attached to the outlet of the drier, which has been filled with gas to eliminate deadspace error in measurement. A thermometer shall then be placed in the top of the sample tube and immersed in the charcoal to a depth of 2 inches. The test is then started by opening the valve between the sample tube and drier; the flow being adjusted to conform with the desired rate. The maximum rate used shall be as follows:

Up to 1 gallon/M 15 cubic feet per hour.

From 1 to 3 gallons/M 10 cubic feet per hour.

Above 3 gallons/M 6 cubic feet per hour.

For treated gas (dry) a rate of 30 cubic feet per hour is allowed. The temperature rises should be recorded in suitable form and the test stopped at the top of the fourth rise, which is indicated by the thermometer reading.

In stopping the test the control valve on the outlet of the dryer shall be closed to insure no further flow of gas through the sample tube.

B. Distillation.

1. Apparatus. (a) Retort shall be made of copper or steel, of sufficient thickness to stand 100 pounds cold water test. The size should be 1 liter capacity and the recommended dimensions are 4 inches in diameter and approximately 8 inches overall length.

(b) Dephlegmator optional.

(c) Condenser bath capacity shall be at least 1,200 cubic inches. The condendser tube to be of nickel plated steel or brass tubing with an area of at least 100 quare inches. The condenser tube shall have a minimum pitch of 1 inch to 8 in length.

(d) Receiver capacity shall be 100 cc. calibrated in one-half cc. divisions and shall be completely submerged in a receiver bath of suitable proportions.

(e) Control Apparatus. (1) Thermometers graduated in 2 degrees Fah-

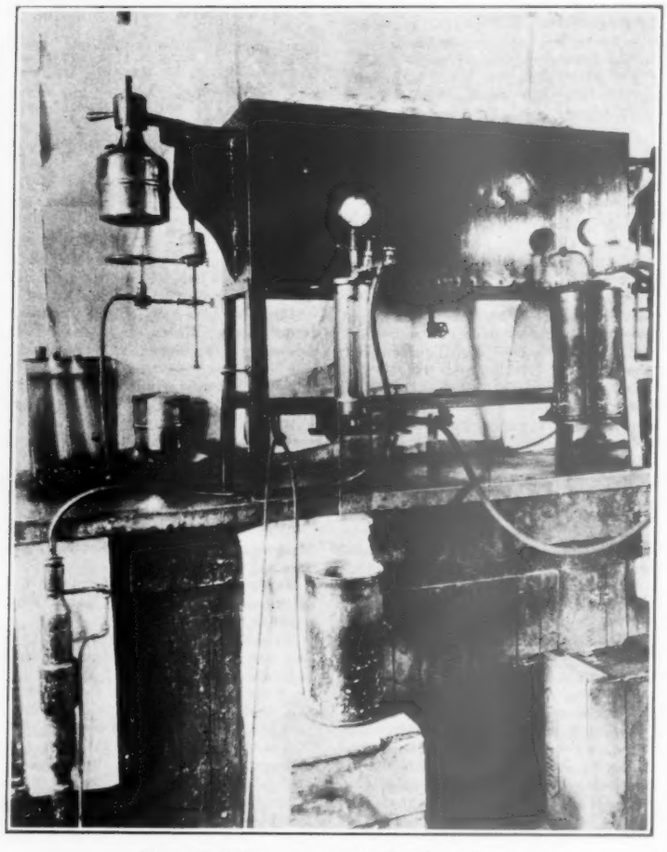


Figure 1—Laboratory apparatus for charcoal test.

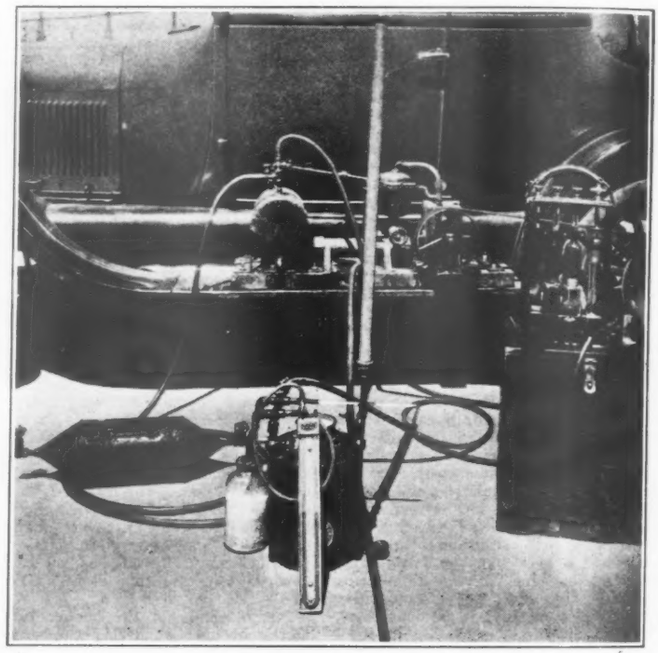


Figure 2—Field apparatus for charcoal test.

renheit or smaller divisions shall be used for indicating the temperature of the condenser and receiver baths. The use of a low distillation thermometer for indicating the temperature of the distillation is optional. (2) A zero 60-pound pressure gauge graduated in 1 pound intervals shall be connected to the receiver to indicate the distillation pressure. (3) A pressure regulator shall be attached to the vent off the receiver, which shall maintain a back pressure of 30 pounds. The allowable pressure variation shall not be greater than 1 pound.

II. Procedure.

(a) Glycerin dehydrated to 5 per cent (95 per cent pure) shall be added and

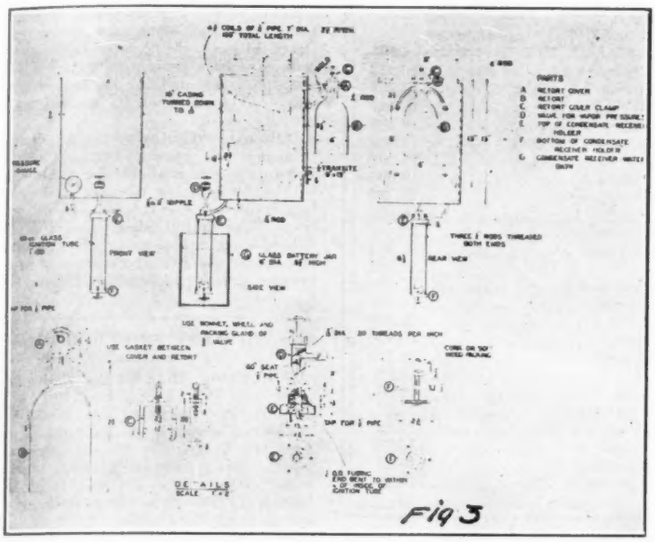


Fig 3

mixed with the charcoal in the flask or retort. The amount used shall be 125 to 150 cc.

(b) The temperature of the receiver and condenser bath shall be maintained at 32-44 degrees Fahrenheit.

(c) The distillation pressure shall be 30 pounds gauge.

(d) No vapor shall be vented through

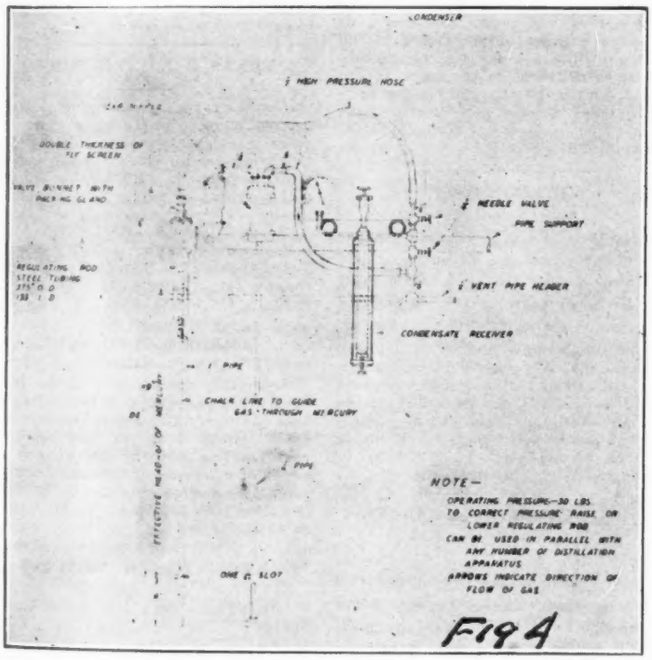

CONDENSER
½ HIGH PRESSURE HOSE
NEEDLE VALVE
PIPE SUPPORT
½ VENT PIPE HEADER
CONDENSATE RECEIVER
CHALK LINE TO GUIDE GAS THROUGH MERCURY
NOTE—
OPERATING PRESSURE—30 LBS. TO CORRECT PRESSURE RAISE OR LOWER REGULATING ROD
CAN BE USED IN PARALLEL WITH ANY NUMBER OF DISTILLATION APPARATUS
ARROWS INDICATE DIRECTION OF FLOW OF GAS

Fig 4

regulator until distillation pressure is reached.

(e) The distillation period shall not be less than 15 minutes from time heat is applied to retort and shall continue until 20 cc. of glycerin has been distilled and collected in the receiver.

(f) The volume of gasoline condensate shall be read at 30 pounds pressure and 32-34 degrees Fahrenheit and this apparent volume corrected to 60 degrees Fahrenheit by means of the expansion factor 0.0008 per degree.

(g) For calculating the gallons of gasoline per 1,000 cubic feet, the volume of gas to be used shall be the observed volume corrected to the standard conditions of gas measurement.

C. Charcoal Activation Test.

The apparatus consists of bottles of concentrated sulphuric acid through which air under pressure is bubbled to remove moisture. The dried air then bubbles through bottles containing C. P. carbon tetrachloridde immersed in an ice bath at 32 degrees Fahrenheit. (These bottles should have been cooled 30 minutes before passage of air.) Saturated with carbon tetrachloride at this temperature the air vapor mixture passes through the flow meter, then through the charcoal tube, and finally into gas flame in which the copper coil is suspended. The glass charcoal tube should be exactly 14 mm. in diameter, and the tube should be exactly 10 cm. long. A perforated porcelain disk in the bottom of the tube holds the charcoal in place. The flow meter is calibrated so it passes exactly 766 cc. per minute.

In conducting the test the time is noted, the gas burner lighted to give a flame of height of about 1¼-inch and air supplied under positive pressure until the first indication of a green color in the flame is noticed. The time is again taken. The difference gives the carbon tetrachloride time for the charcoal. This time multiplied by three gives the chloropicrin time. The degree of activation referred to in these standards is the chloropicrin time.

D. Meter calibration. 1. Apparatus.

(a) Standard prover of floating bell type (capacity optional.)

(b) Standard cubic-foot bottle.

(c) Homemade provers of the water displacement type, properly calibrated.

(d) Sargent or American Wet Test Meters, for orifice meter calibration.

2. Procedure. Using any of the specified type of provers, tests should be made, using rates which will reproduce, as nearly as possible, the conditions under which the meter is to be used. Adjustments should be made until the meter agrees with the prover within an error limit of plus or minus 1 per cent. Meters in constant service shall be recalibrated at least once in each two weeks.

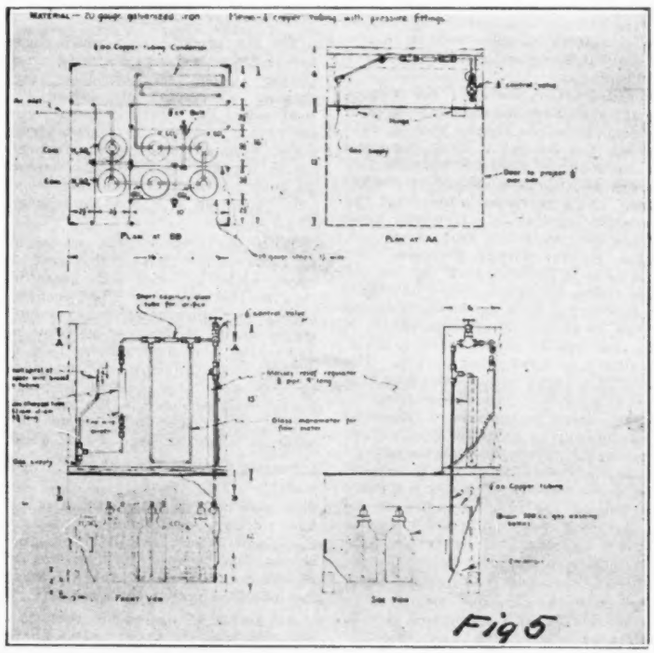


Fig 5

REFINERS AND MARKETERS ALL SET FOR NEW YEAR

(Continued from Page 126)

stead of being a benefactor to the community is soon only one of the sellers of cheap motor fuel.

Reports Show Good Gallonage

Reports from distributors locally continue to show a good gallonage. The southern parts of the territory have had a good demand for gasoline and for the most part especially in the towns and along the hard roads. In the northerly parts of the territory deep snows have held back the use of the motor and there has been the usual decrease in gasoline consumption. The territory as a whole should show a substantial increase over the final month of 1926.

There continues to be a great deal of complaint regarding the making of discounts, but there is little talk of there being any change in this practice. This is contrary to the situation in the summer when the most definite statements were made that the practice would be stopped and the former one-price system be reinstated. The date fixed in these reports came and went and there was no change and there is no reason to expect that the larger companies will make any general change in the practice. For one reason they all assert that whatever the new plan was it would be no better adhered to than the present system.

Several well posted oil men during the week have discussed the prospect for the coming year with particular reference to the distributor. There was no disagreement to the conclusion that conditions were such that they could not be remedied even if the effort were made inside of several months. The most important reason for a continuance of present conditions was in their opinion that the entire industry was over doing its field. Too much crude, too much of refined products, too many distributing agencies.

New filling stations are being erected and old ones increased in size with little if any regard to the actual sales possibilities of these stations. This is true according to the reports of observant oil men the country over. Yet the increase in the number of cars registered at the close of 1927 as compared with the year previously was only about 5 per cent according to preliminary reports.

MOTOR REGISTRATION SHOWS SMALL GAIN

NEW YORK, Dec. 31. — Automobiles registered in the United States in 1927 showed the smallest percentage increase since the infancy of the industry, and the smallest numerical increase since 1916, the annual survey by Motor Magazine shows.

Withdrawal of the Ford car from the market during the last half of the year and more widespread junking operations were held responsible for the poor showing. An increase was forecast for 1928.

Registrations as of January 1, 1928, the survey indicated, will show 23,226,-191 automobiles, an increase of 1,224,-798 over January 1, 1926. Passenger cars number 20,282,000 and trucks 2,994,000. The increase was smaller by 7,500 than in the depression year of 1921, and 61,-000 smaller than in the war year of 1918.

GEOPHYSICAL TESTS BEING MADE IN PERSIA

The testing of seven outside areas in Persia has proceeded with rapidity in spite of many difficulties by the Anglo-Persian Oil Co. but although a total of over 37,000 feet has been drilled, the main limestone has so far not been reached in any of them, and several of these wells are at depths which will make further progress difficult and slow.

In Persia it has been found hard to deduce from surface evidence the relative position of the underground reservoir rock; therefore it was decided some time ago to attach a skilled section of geophysicists to the geological staff. These men have been and are, continuously conducting surveys by means of the torsion balance. At the same time active research is being conducted in seismographic, magnetic, electric and sonic methods.

REFINING AND MARKETING

To Standardize All Agreements Covering Use of Rail Sidings

In an effort to standardize the form of agreement covering use of sidings between railroads and the refiners, J. C. Irwin, chairman of committee on general contract forms for the American Railway Engineering Association has outlined several points of differences remaining unsettled between the refiners and railroads. Mr. Irwin said the committee is making every effort to understand the position of both the refiners and the railroads and all that remains in question now are a few sections which are outlined and discussed as follows:

Section 5. Use, provides, "the railway company shall have the right to use, without cost, the whole or any part of said sidetrack for general railway purposes, provided such use shall not unreasonably interfere with the use thereof by the industry." This provision is universal and is generally acceptable. However, some fear has been expressed as to what constitutes "general railway purposes." The difficulty is in defining such use but the saving clause in regard to not unreasonably interfering with the business of the industry is there. Suggestion has been made that the track might be used by the railway to serve other parties. The right of the railway to use the track for its own purposes does not convey the right to others to trespass on the land of the industry in order to be served by the railway. It was also suggested that the use by the railway should be confined to emergencies. This is not sufficient because the very existence of the industry track creates a need for the use of it for railway purposes aside from direct service to the industry.

It often occurs that a group of industry tracks are in one locality. In picking up, dropping or spotting cars on these tracks it facilitates the work of the switching or train crew to be able to set cars temporarily on the unoccupied portion of any of these tracks and in so doing, time is saved and the various industries benefit in turn. In other cases, the industry track may be some distance from a yard or passing track and a train which has served the industry may have to clear a train on the main track. It may not have time to reach a yard or passing track but it can be accommodated on the industry track. I there is no interference with business, there should be no objection.

Changes or Enlargements

Section 6. Changes or enlargements is intended to provide that the railway shall not be required to bear the expense of changes in the industry track from any cause. Even though the railway changes its grade or alignment, necessitating changes in the industry tracks, it is considered that the results are the exigencies of business and that each industry shall stand on its own feet. If a railway should obligate itself to bear the expense of all such changes it undoubtedly would endeavor to be more restrictive in regard to the installation of industry tracks.

Section 8. Liability, is of special interest. "An industrial sidetrack is essentially a plant facility and furnishes the shipper with service elsewhere than at the regular station of the railway company and after leaving its own right of way in serving the industry, the railway becomes the agent of the industry. These liability provisions are being carefully reviewed, but whether any change should be made in the wording or not, the fact remains that in going on to the property of the industry the service differs from that on the railway's property. The railway has no police powers over the property of the industry, and it should not be left to discussion after trouble occurs, as to whether the industry has provided proper safeguards.

All forms of agreement that can be considered as standards relieve the railway from liability for loss or damage to property of the industry, resulting from fire caused by locomotives when serving the industry. The individual industries can insure themselves against such losses. It would be unreasonable to expect the railway to undertake to protect itself with insurance on all industry property, and aside from that, it is a risk beyond that which is incurred in general delivery service.

Some forms of agreement provide that the railway shall have the right to use or extend the industry track for the purpose of serving any other industry now or hereafter located adjacent to the track or beyond the plant of the industry with allowances to be made to the original industry for cost of construction and maintenance.

In some quarters there is a demand for such a provision in a standard form but the A. R. E. A. form does not include it.

In general it should be borne in mind that the railway and the industry, while working in close co-operation, should both stand on their own feet. Each one is expected to make dividends for its stockholders and, in fixing its rates of pay for service or commodities, the railway is probably the more restricted of the two. With questions of equitable division of expense once sett'ed, the principal object in obtaining "uniformity in industrial sidetrack agreements" is to enable a man to know what to expect, wherever his activities may lead him.

SLIGHT ADVANCE IN GASOLINE TANK WAGON PRICE IN DECEMBER

Minor changes in the gasoline tank wagon prices with a tendency toward greater stability in the present price structure summarizes the conditions as shown by The Oil and Gas Journal's review of prices in the 50 cities for December. The average price on January 1, free of taxes, was 14.29 cents compared to 14.21 cents the month previous. This may mark the turning point in the trend which has led prices to the lowest they have been for three years.

The few price changes which occurred during December were scattered over the United States, no particular section showing a general strengthening nor weakening. No new price wars were reported but competition together with a lesser demand for gasoline during the cooler weather in California has made the future more uncertain. This was the only indication of a possible future sectional change.

With the average tank wagon price at 14.29 on the first of this year, 1928 opens with the price 3.28 cents lower than at the beginning. The decline has been general throughout the year but the major share of the decline was made during the first six months. This again reflects the influence of crude price changes and many believe no material change will be made in the tank wagon and station prices until an advance is made in crude prices and this does not seem probable or advisable for the present.

AVERAGE TANK WAGON PRICE IN 50 CITIES

(Exclusive of tax)

January 1, 1926	16.133
February 1	16.213
March 1	17.267
April 1	18.517
May 1	18.487
June 1	19.607
July 1	16.697
August 1	19.697
September 1	19.587
October 1	19.167
November 1	18.187
December 1	17.607
January 1, 1927	17.567
February 1	17.469
March 1	17.007
April 1	16.160
May 1	15.320
June 1	14.720
July 1	14.86
August 1	14.89
September 1	14.62
October 1	14.39
November 1	14.32
December 1	14.21
January 1, 1928	14.29

(Continued on Page 137)

SECURES P. O. CONTRACT

CHICAGO, Dec. 31.—The contract to supply the motor vehicle department of the Chicago post office with its gasoline for the first quarter of 1928 has been awarded to the Seneca Petroleum Co. of this city. The price is in tank car lots f.o.b. Group 3 at one-eighth cent below the established refinery market with a maximum of 6⅝ cents. Shipments to be on government bill of lading to the storage of the Seneca company, where it will be delivered to the truck of the post office department. The seller is to receive one-half cent a gallon for handling. The requirements of the contract are about 220,000 gallons.

VETERAN DIES

CHICAGO, Dec. 31.—Harry Snell, one of the veterans of the oil business, died at Toledo during the week. Mr. Snell was for many years at the head of the Chicago division of The Texas Company, but his connection with the oil industry dated to the early days in the Pennsylvania oil fields. Since his retirement from The Texas Company several years ago, Mr. Snell has been in poor health and has not been active in the business. He died at the home of his sister in Toledo and interment was in that city.

ACME PETROLEUM CHANGES

CHICAGO, Dec. 31.—Carl Beroth, president of the Acme Petroleum Co., announces that effective January 2 the organization will be increased by additions to the sales staff. Walter Garvey, formerly manager of tank car sales for the Roxana Petroleum Corp. at Chicago, and later in the distributing business, and J. O. Allison, who has been with the Chicago office of the Transcontinental Oil Corp., will join the Chicago office staff. H. W. Whittaker, recently of the sales force of the Peerless Oil & Refining Co., has been added to the Kansas City office.

ETHYL GASOLINE GAIN IN ENGLISH MARKET

Although the shipments of tetraethyl-lead gasoline to England has been small this volume has been constantly increasing for the last 18 months. As yet, it is not distributed through the regular stations to the regular motor trade, the principal users being the racing cars. Practically all of the later model racing cars have been designed for higher compression ratios, making the use of tetraethyl-lead gasoline or its equivalent imperative.

It is planned to carry the distribution to many new centers during this year and to make it available for general use within the next few months, at the more important points at least. Some questions have been raised regarding the hazards involved in its use, but an investigation by the British government of the present methods of handling it have been found safe.

MIDWEST TO PURCHASE

The Midwest Refining Co., the western subsidiary of the Standard Oil Co. of Indiana, has completed the purchase of the retail distribution facilities of the Arro Oil & Refining Co. of Lewistown, Mont. These include 45 filling stations and 3 warehouses scattered throughout Montana. The Arro Oil & Refining Co. still retains the refinery at Lewistown and its production in the Cat Creek and Sunburst Fields.

The Midwest Refining Co., a few months ago, bought the filling stations of Vickers Petroleum Co. in Colorado and New Mexico, about 75 stations, giving the Midwest retail distribution over these states. With purchase of the Arro filling stations, Midwest will have a similar system in Montana. The purchase is in line with a move of the Midwest Refining Co. to enter the retail trade in the Rocky Mountain region.

TEXAS GASOLINE PRICES

Gasoline taxes for November showed a marked increase in Texas over the previous month despite the cold weather. Collections were $10,000 more and the total is given at $1,630,000. The five major companies paying these taxes and the amounts paid are listed as follows: Gulf Refining Co., $372,417.99; Magnolia Petroleum Co., $325,769.46; The Texas Company, $318,059.89; Pierce Petroleum Co., $110,964.72; Humble Oil & Refining Co., $89,179.20.

CREDITORS TO MEET

A meeting of creditors of the Indiahoma Refining Co. will be held in St. Louis, January 27. The meeting is called by Walter D. Coles, the referee in bankruptcy. The company has been in the hands of a receiver for several years and properties have been sold. J. H. Obert has filed with the court his final report as trustee.

RECEIVERSHIP HEARING

HOUSTON, Tex., Jan. 2.—A hearing on the application of the Galena Signal Oil Co. of Pennsylvania for a permanent receivership for the Galena Signal Oil Co. of Texas, a subsidiary company, will be held in the Sixty-first District Court here January 10, it has been announced at offices of the Texas company here. McDonald Meachum of Houston was appointed as receiver in December on application for a temporary receivership. It is now sought to make the receivership permanent.

Brief Items for Plant Operators

Tests Show Sulphur Content in Motor Fuels Important

Motor fuel which contains 0.151 per cent sulphur does appreciable harm to wrist pins of an automobile, according to an investigation conducted by S. H. Diggs of the Standard Oil Co. of Indiana, Casper, Wyo. Based on tests made by Mr. Diggs in co-operation with the Continental Motors Co. the present specification of 0.1 per cent is necessary to protect the mechanism in all operating conditions.

The tests were described at the meeting of the American Chemical Society in Detroit and are published in the current issue of Industrial and Engineering Chemistry, official publication of the society. The tests were of a practical nature and so far as possible duplicated the various conditions in which an automobile or truck are operated.

Following are Mr. Diggs' conclusions relative to the investigation:

"1. Excessive sulphur in gasoline does cause serious corrosion of moving parts within the crankcase, especially in cold weather and when frequent stops are made.

"2. There is no evidence that such corrosion occurs in warm weather or to any great extent on cars or parts that are kept continuously running during the day and in heated garages at night.

"3. There is no evidence to indicate that anything other than sulphur in the gasoline is to blame. Sulphur combined in the lubricant is not to blame except in so far as it may actually be burned in the cylinder.

"4. The corrosion is undoubtedly caused in the first place by sulphuric acid, the formation of iron sulphide and oxide being secondary. As all forms of organic sulphur are burned to sulphur dioxide, which is later changed to sulphuric acid, it is quite evident that the original form of sulphur in the fuel is of no importance.

"5. The amount of corrosion is disproportionately greater for high-sulphur than for low-sulphur fuel. This may be explained on the following grounds: The crankcase oil contains small amounts of material which will neutralize the sulphuric acid. In the best of conditions crankcase oil after a few hours' use, always shows some traces of finely divided iron and when used on dirt roads contains some road dust which is usually alkaline, often consisting essentially of carbonate of lime. If the amount of sulphuric acid formed is insufficient to react with fine divided iron and road dust, no injury results to the solid metal parts. Therefore, a certain small amount of sulphur in gasoline is not injurious. When the amount of acid formed in the crankcase becomes greater than that which can be neutralized by the finely divided iron and road dust, corrosion soon begins.

"From the tests described herein it is evident that a sulphur content of 0.040 per cent does no harm, that 0.151 per cent sulphur does appreciable harm, and that 0.458 per cent sulphur does very great harm. Just where to draw the line is hard to say. It is probable that conditions were decidedly more severe than are usually met in the actual operation of an automobile. It is also obvious that the condition of the car as regards tightness of piston rings is a material factor, as well as the type of bearings. It would seem, however, from the data given that 0.100 per cent would be a fair dead line. No doubt a lower sulphur content is desirable, but it is probable that this amount would cause no appreciable injury; on the other hand it seems very certain that 0.200 or 0.300 per cent sulphur would cause very serious damage to a car operated intermittently in cold weather. As weather conditions and the way the car is used vary so greatly, no exact figure can be given for the maximum allowable sulphur.

Mechanism of Corrosion

"From these facts was deducted and reported the following hypothesis of the mechanism of the corrosion, which seems in accordance with the opinion now generally held by the industry:

"1. Sulphur compounds, regardless of their nature, are burned more or less completely to sulphur dioxide in the cylinder of the engine.

"2. Some of this sulphur dioxide along with carbon dioxide and water vapor finds its way past the piston rings into the crankcase, but as long as sulphur dioxide is uncombined with water it has no serious action on metals, nor does it tend greatly to oxidize to sulphur trioxide.

"3. If the weather is cold and the engine frequently stopped, much of the water vapor which leaks into the crankcase will condense and will absorb the sulphur dioxide, forming a dilute solution of sulphurous acid This being churned up with the oil in the crankcase and air tends to go over to sulphuric acid. We would expect this reaction to be very

(Continued on Page 137)

MILITARY USE OF TETRA ETHYL LEAD REGULATED

Following the government's investigation of the hazards involved in the handling and use of tetraethyl lead and ethyl gasoline, the War Department has issued instructions to all military branches for their information and guidance regarding the handling of these. The full instructions follow:

1. When the content of tetraethyl lead in commercial ethyl gasoline used in the military service is in excess of the proportion of 1:1260 by volume for commercial tetraethyl lead, or 1:1300 for C. P. tetraethyl lead, a special report in each instance will be made to the War Department.

2. Mixing ethyl fluid with gasoline except for certain specific requirements such as research, military and naval use, and air mail service is done only at the main distribution centers and in not less than tank car lots. Adequate provisions are made at each such center for thorough mechanical distribution of the ethyl fluid throughout the gasoline, and the efficiency of such distribution is controlled by the analysis of samples.

3. When ethyl fluid is mixed with gasoline at military stations report will be made to the War Department showing the names of the persons engaged in mixing, the method adopted and the apparatus used.

4. As few persons as practicable shall be employed in this work.

Safety Rules Issued

5. No person shall be engaged in mixing until adequately instructed as to the mechanics of mixing, the dangers, and the precautions to be taken.

6. All mixing shall be done with the maximum ventilation practicable under weather conditions existing at the time.

7. Operation of the pumps shall be instantly stopped at the appearance of a leak or other defect and no attempt shall be made to repair or disconnect the system until a qualified man takes personal charge of it.

8. Floors of all places where any possibility of spilling is present are to be provided with drains and proper facilities for making possible a complete flushing out of all spilled fluid, or in their absence provision shall be made for chemically neutralizing any spillage as it occurs.

9. No bulk mixing station shall be dismantled or disconnected for repairs except by a qualified man.

10. Kerosene or other efficient means of preventing skin absorption of tetraethyl lead, and washing facilities shall always be conveniently available.

11. The rules and instructions affecting the employes shall be posted in a conspicuous place where the ethyl fluid is being handled.

AMONG THE TECHNICAL MEN

William Hildebrandt, vice president and general superintendent of the East Chicago, Ind., refinery of the Bartles-Maguire Oil Co. of Milwaukee, has been engaged in the construction and operation of refineries continuously since 1914.

William Hildebrandt

His first employment was at the East St. Louis, Ill., refinery of the East St. Louis Refining Co. Starting at the plant as a pipe fitter, Mr. Hildebrandt was later engaged in the operating end in the capacities of treater and stillman. In 1916 he was placed in charge of the plant as superintendent.

The following year, Mr Hildebrandt was sent to Cleveland, Okla., to remodel a refinery owned by the same interests that controlled the St. Louis refinery. The Cleveland plant was operated under the name of the Laclede Gas & Oil Refining Co.

Mr. Hildebrandt then returned to East St. Louis where his company with C. J. Greenstrreet under the name of the Consolidated Oil & Refining Co. built a small experimental unit of the Greenstreet vapor phase cracking process. In 1919 he was engaged in the construction of a unit of the Greenstreet process at the Toledo, Ohio, refinery of he Paragon Refining Co. Later the Consolidated company also built a unit of the process at East Chicago which was operated until 1921.

In 1922, Mr. Hildebrandt was engaged by the Lewistown Oil & Refining Co. in remodeling its Lewistown, Mont., refinery to operate with Cat Creek crude oil. The following year he returned to the East Chicago refinery and as general superintendent operated the plant for the Interstate Gasoline Co. until 1925.

In the fall of 1926 the Interstate plant was purchased by the Bartles-Maguire Oil Co. The Greenstreet operation was abandoned and two units of the Jenkins cracking process were installed On January 1, Mr. Hildebrandt was made a vice president of the company and placed in general charge of the refinery operation. The refinery has incorporated several features which are unique in plant operation.

PARR TO HEAD CHEMICAL SOCIETY FOR COMING YEAR

Election as president of the American Chemical Society for 1928 of Samuel Wilson Parr, professor emeritus of industrial chemistry in the University of Illinois, and internationally known for his researches in fuel chemistry, has been announced by the Washington office of the society. He is widely known among technical men in the refining industry.

Samuel Wilson Parr

Professor Parr, who succeeds Dr. George D. Rosengarten of Philadelphia, was chosen by mail ballot of the society's 15,000 members, organized into 60 local sections in the principal industrial and agricultural areas of the country. He has been a professor in the University of Illinois since 1891. He is a former director of the Illinois State Water Survey, and since 1905 has been consulting chemist on coal investigation in the Illinois State Geological Survey.

He was one of the first to conduct experiments on the low temperature distillation of coal some 20 years ago. This field of research is at the present time attracting much attention because of the possibilities for the preparation of motor fuels and certain alcohols. The Parr calorimeter has a wide application for the determination of the heating value of fuels and his peroxide method for determining sulphur in petroleum products is probably more familiar to petroleum chemists than any other.

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Jan. 3		Dec. 27		Dec. 20	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.05½	.05⅝	.05⅝		.05⅝	
56-58 450 endpoint	.05½	.05⅝	.05⅝		.05⅝	
58-60 450 endpoint	.05⅝		.05⅝	.05¾	.05¾	.05¾
58-60 437 endpoint (U. S. Motor)	.05¾	.06	.05¾	.06	.05¾	.06
60-62 400 endpoint	.06⅜	.06½	.06⅜	.06½	.06⅜	.06½
64-66 375 endpoint	.06⅞	.07	.06⅞		.06⅞	
68-70 360 endpoint	.07¼		.07¼		.07¼	
64-66 437 endpoint (blend)	.05¾		.05⅞	.06	.05⅞	.06
KANSAS—						
58-60 437 endpoint (U. S. Motor)	.05¾	.06	.06⅛	.06¼	.06⅛	.06¼
NORTH TEXAS—						
56-58 450 endpoint	.05½		.05⅝		.05⅝	
58-60 450 endpoint	.05½		.05⅝		.05⅝	
58-60 437 endpoint (U. S. Motor)	.05¾	.06	.05¾	.06	.05¾	.06
60-62 400 endpoint	.06⅜	.06½	.06⅜	.06½	.06⅜	.06½
64-66 390 endpoint	.06½	.06⅝	.06½	.06⅝	.06½	.06⅝
64-66 375 endpoint	.06⅞		.06⅞		.06⅞	
68-70 360 endpoint	.07	.07⅛	.07	.07⅛	.07	.07⅛
64-66 437 endpoint (blend)	.05¾		.05⅞	.06	.05⅞	.06
NORTH LOUISIANA—						
58-60 437 endpoint (U. S. Motor)	.06½	.06¾	.06½	.06¾	.06½	
ARKANSAS—						
58-60 437 endpoint (U. S. Motor)	.06⅜	.06⅝	.06⅜	.06⅝	.06⅜	
PENNSYLVANIA—						
52-54 Naphtha	.07¾	.08	.07¾	.08	.07¾	.08
54-56 Naphtha	.07¾	.08	.07¾	.08	.07¾	.08
58-60 Gasoline	.07⅞	.08⅛	.08	.08¼	.08	.08¼
60 Gasoline	.08⅛	.08¾	.08¾	.09	.08¾	.09
62 Gasoline	.08¾	.09	.09⅛	.09¼	.09⅛	.09½
64 Gasoline	.09	.09¼	.09¼	.09½	.09¼	.09½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.09	.10	.10	.10¼
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.05⅝		.05¾		.05¾	
56-58 450 endpoint	.05⅝		.05¾		.05¾	
58-60 437 endpoint U. S. Motor	.05⅝	.06	.05¾	.06	.05¾	.06
60-62 400 endpoint	.06½		.06⅜	.06½	.06⅜	.06½
64-66 375 endpoint	.06⅞	.07	.06⅞	.07	.06⅞	.07
68-70 360 endpoint	.07⅛	.07⅜	.07⅛	.07⅜	.07⅛	.07⅜
64-66 437 endpoint (blend)	.05⅞		.06	.06¼	.06	.06⅛

NATURAL GASOLINE

	Jan. 3		Dec. 27		Dec. 20	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05¼		.05¼		.05⅛	.05¼
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅞	.05	.04⅞	.05	.04⅞	
Grade B, 76-83.9, 375 e.p., rec. 85%	.04	.04¼	.04¼		.04⅛	.04½
Grade BB, 84-92, 375 e.p., rec. 85%	.04	.04⅛	.04	.04⅛	.04⅛	
Grade C, 80-92, 375 e.p., rec. 78%	.03½	.03¾	.03½		.03⅞	.04
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05¼		.05¼		.05⅛	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅞		.04⅞		.04⅞	.05
Grade B, 76-83.9, 375 e.p., rec. 85%	.04	.04¼	.04⅛	.04¼	.04⅛	
Grade BB 84-92 375 e.p., rec. 85%	.04		.04	.04⅛	.04⅛	
Grade C, 80-92, 375 e.p., rec. 78%	.03½	.03⅝	.03½	.03⅝	.03¾	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.05¼		.05¼		.05¼	
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅛		.05⅛		.05⅛	
Grade C, 80-92, 375 e.p., rec. 78%	.04¾		.04¾		.04¾	.04⅞
CALIFORNIA—						
75-85, 375, 390 endpoint	.08½	.09	.08½	.09	.08½	.09
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.05¼		.05¼	.05⅜	.05⅛	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04⅞		.04⅞		.04⅞	
Grade B, 76-83.9, 375 e.p., rec. 85%	.04		.04¼		.04⅛	
Grade BB, 84-92, 375 e.p., rec. 85%	.04	.04⅛	.04	.04¼	.04⅛	
Grade C, 80-90, 375 e.p., rec. 78%	.03½	.03⅝	.03½		.03⅜	

Note: All natural gasoline, except California, is noncorrosive.

BURNING OIL

	Jan. 3		Dec. 27		Dec. 20	
KANSAS—						
41-43 water white Kerosene	.04½		.04½	.04⅝	.04½	.04⅝
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04¼		.04¼	.04½	.04¼	.04½
42-44 water white Kerosene	.04¾	.05	.04¾	.05	.04¾	.05
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05		.05		.05	
NORTH TEXAS—						
41-43 water white Kerosene	.04⅛	.04⅜	.04¼	.04½	.04¼	.04½
40-42 water white Kerosene	.04⅛		.04⅛	.04¼	.04⅛	.04¼
ARKANSAS—						
41-43 water white Kerosene	.05		.05		.05	
PENNNSYLVANIA—						
43 Kerosene prime white	.06⅛	.06⅜	.06⅛	.06⅜	.06⅛	.06⅜
45 Kerosene water white	.06¼	.06½	.06¼	.06½	.06¼	.06½
46 Kerosene water white	.06½	.06¾	.06½	.06¾	.06½	.06¾
47 Kerosene water white	.07	.07¼	.07	.07¼	.07	.07¼
300 Mineral Seal	.07¼	.07½	.07¼	.07½	.07¼	.07½
CALIFORNIA—						
38-40 water white Kero.. (high burning test)	.05½	.06	.05½	.06	.05½	.06
Engine distillate, 43-45, 445 endpoint	.07	.07¾	.07	.07¾	.07	.07¾
Engine distillate, 42-44, 480 endpoint	.06¾	.07	.06¾	.07	.06¾	.07
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.04¼	.04½	.04¾	.04½	.04⅜	.04½
42-44 water white Kerosene	.04¾	.05	.04¾	.05	.04¾	.05

FUEL OILS

	Jan. 3		Dec. 27		Dec. 20	
KANSAS—						
22-26 Fuel Oil	.75	.80	.80	.85	.80	.85
18-20 Fuel Oil	.77½	.80	.80		.80	
32-36 Gas Oil	.02½		.02½		.02½	
38-40 Distillate	.03¼	.03¾	.03¼	.03¾	.03¼	.03¾
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil	.70	.75	.70	.75	.70	.75
18-22 Fuel Oil	.75	.77½	.75	.77½	.75	.77½
22-26 Fuel Oil	.77½	.80	.77½	.80	.77½	.80
24-26 Fuel Oil	.80	.85	.80	.85	.80	.85
26-30 Fuel Oil	.85	.87½	.85	.87½	.85	.87½
28-30 Fuel Oil	.90	.95	.90	.95	.90	.95
32-36 Gas Oil (dark)	.02¼	.02⅜	.02¼	.02⅜	.02¼	.02⅜
32-36 Gas Oil (straw overhead)	.02⅜	.02½	.02⅜	.02½	.02⅜	.02½
36-38 Distillate	.03	.03¼	.03	.03¼	.03	.03¼
38-40 Straw Distillate	.03	.03½	.03	.03½	.03⅛	.03¼
NORTH TEXAS—						
24-26 Fuel Oil (Sellers' cars)	.75	.80	.75	.80	.75	.80
32-36 Gas Oil (straw)	.02¼		.02¼		.02¼	
38-40 Straw Distillate	.03		.03		.03	
NORTH LOUISIANA—						
18-20 Fuel Oil	1.00		1.00		1.00	
32-36 Gas Oil	.03	.03¼	.03	.03¼	.03	.03¼
ARKANSAS—						
33-36 Distillate	.03½	.03¾	.03½	.03¾	.03½	.03¾
32-36 Gas Oil (straw)	.02¾		.02¾		.02¾	
16-20 Refinery Fuel Oil	.95		.95		.95	
GULF COAST (South Texas)—						
Gas Oil	.03⅞	.04	.03⅞	.04	.03⅞	.04
Fuel Oil	1.25	1.30	1.25	1.30	1.25	1.30
PENNSYLVANIA—						
30-34 Fuel Oil	.04¼	.04⅝	.04¼	.04⅝	.04¼	.04⅝
36-40 Fuel Oil	.04⅜	.04⅝	.04⅜	.04⅝	.04⅜	.04⅝
CALIFORNIA—						
33-36 Distillate	.03¼	.03¾	.03¼	.03¾	.03½	.03¾
27-32 Distillate	.02¼	.03	.02¼	.03	.02¼	.03
*15-20 Fuel Oil, Bunkers (at tide water)	1.00		1.00		1.00	
15-20 Fuel Oil (cargo lots)	.90		.90		.90	
27 plus Diesel	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3	.77½	.82½	.80	.82½	.80	.82½
22-26 Fuel Oil (sellers' cars) Group 3	.75	.80	.77½	.80	.77½	.80
18-22 (Group 3)	.72½	.75	.75	.77½	.75	.77½
16-20 Smackover	1.00		1.00		1.00	
32-36 Gas Oil (zero)	.02¾	.03	.02¾	.02⅞	.02¾	.02⅞
32-36 Gas Oil (industrial)	.02½	.02⅝	.02½		.02½	
36-38 Distillate	.03¼	.03⅛	.03⅛		.03⅛	
38-40 Straw Distillate	.03¼	.03⅜	.03¼	.03⅜	.03¼	.03⅜

*Bunkers.

LUBRICATING OIL AND WAX

	Jan. 3		Dec. 27		Dec. 20	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¼	.06½	.06¼	.06½	.06¼	.06½
100 vis., 3 color, 20-25 cold test	.06	.06¼	.06	.06¼	.06	.06¼
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.08	.08¼	.08	.08¼	.08	.08¼
180 vis., 3 color, 23-28 cold test	.09⅜	.10	.09⅜	.10	.09⅜	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09⅜	.09¼	.09⅜	.09¼	.09⅜
180 vis., 5 color, 23-28 cold test	.09⅛	.09½	.09⅛	.09½	.09⅛	.09½
200 vis., 3 color, 23-28 cold test	.09½	.10½	.09½	.10½	.09½	.10½
200 vis., 4 color, 23-28 cold test	.09⅜	.10¼	.09⅜	.10¼	.09⅜	.10¼
200 vis., 5 color, 23-28 cold test	.09¼	.10	.09¼	.10	.09¼	.10
240 vis., 3 color, 25-30 cold test	.13¾	.14	.13¾	.14	.13¾	.14
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¼	.12½	.12¼	.12½	.12¼	.12½
280 vis., 3 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
280 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
Cylinder Stocks:						
600, steam refined, light green	.08	.09½	.08	.09½	.08	.09½
600, steam refined, dark green	.07	.07½	.07	.07½	.07	.07½
190-200 vis. @ 210 Bright Stock	.30	.32	.30	.32	.30	.32
150-160 vis. @ 210 Bright Stock	.24	.25	.24	.25	.24	.25
Waxes:						
124-126 White Crude Scale Wax	.02½	.02⅝	.02½	.02⅝	.02½	.02⅜
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundelbloom	.07¾	.08	.07¾	.08	.07¾	.08
36 Miners' Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
150, 3 color	.26½	.27	.26½	.27	.26½	.27
180, 3 color	.31	.31½	.31	.31½	.31	.31½
200, 3 color	.32	.32½	.32	.32½	.32	.32½
220, 3 color	.34½	.35	.35½	.35	.34½	.35
600, steam refined	.09½	.10	.09¼	.09¾	.09¼	.09¾
635, steam refined	.11	.11¼	.10½	.11	.10½	.11
650, steam refined	.11½	.12	.11¼	.11¾	.11¼	.11¾
600, Pennsylvania flash	.15	.16	.15	.16	.15	.16
*550, E filtered	.15¾	.16	.15¾	.16	.15¾	.16
*600, E filtered	.16½	.17	.16½	.17	.16½	.17
600, E filtered	.15½	.16	.15½	.16	.15½	.16
600, D filtered	.24½	.25	.24½	.25	.24½	.25
550, E filtered	.15½	.16	.15½	.16	.15½	.16
550, D filtered	.21½	.22	.21½	.22	.21½	.22
Pennsylvania Bright Stock	.28½	.29	.28½	.28	.28½	
†122-124 White Crude Scale Wax	.02⅞	.03	.02⅞	.03	.02⅞	.03
124-126 White Crude Scale Wax	.02⅞	.03	.02⅞	.03	.02⅞	.03

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06¼	.07	.06¼	.07	.06¼	.07
No. 3 color, 200 vis., pale oil	.08¾	.09	.08¾	.09	.08¾	.09
No. 3 color, 300 vis., pale oil	.10	.10½	.10	.10½	.10	.10½
No. 3½ color, 500 vis., pale oil	.11½	.12	.11½	.12	.11½	.12
No. 4 color, 750 vis., pale oil	.14	.14½	.14	.14½	.14	.14½
No. 5 to 6 color, 200 vis., red oil	.07½	.08	.07½	.08	.07½	.08
No. 5 to 6 color, 300 vis., red oil	.08½	.09	.08½	.09	.08½	.09
No. 5 to 6 color, 500 vis., red oil	.09½	.10½	.09½	.10½	.09½	.10½
No. 5 to 6 color, 750 vis., red oil	.12	.12½	.12	.12½	.12	.12½
No. 2 color, 200 vis., pale filtered	.11½	.12½	.11½	.12½	.11½	.12½
No. 2 color, 300 vis., pale filtered	.13	.13½	.13	.13½	.13	.13½
No. 2½ color, 500 vis., pale filtered	.14	.14½	.14	.14½	.14	.14½
No. 2½ color, 750 vis., pale filtered	.17½	.19	.17½	.19	.17½	.19

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

CALIFORNIA—						
130 vis., 2½-3 color	.09	.10	.09	.10	.09	.10
200 vis., 2½-3 color	.10	.10½	.10	.10½	.10	.10½
300 vis., 3-3½ color	.10½	.11	.10½	.11	.10½	.11
350 vis., 3½-4 color	.11	.12	.11	.12	.11	.12
400 vis., 3½-4 color	.13	.14	.13	.14	.13	.14
Red Neutral:						
200 vis., 4½-5 color	.08½	.09	.08½	.09	.08½	.09
300 vis., 5-6 color	.09	.09½	.09	.09½	.09	.09½
400 vis., 5-6 color	.11	.11½	.11	.11½	.11	.11½
500 vis., 4½ 5 color	.11¼	.12	.11¼	.12	.11¼	.12
500 vis., 5-6½ color	.11	.11½	.11	.11½	.11	.11½
600 vis., 6 plus color	.12	.12½	.12	.12½	.12	.12½

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Jan. 3	Dec. 27	Dec. 20
Gasoline, U. S. Motor, 58-60 437	.08¼	.08¼	.08¼
Kerosene, water white, 41-43	.07½	.07½	.07½
*Fuel Oil, bunker "C," 14-16, per bbl	1.35	1.35	1.35
*Fuel Oil, Diesel, 28-30, per bbl.	2.10	2.10	2.10
Gas Oil, 28 plus	.05½	.05½	.05½
25 pale Paraffin Oil	.12	.12	.12
28 pale Paraffin Oil	.07	.07	.07
285 red Paraffin Oil	.11½	.11½	.11½
250 red Paraffin Oil	.10½	.10½	.10½
225 red Paraffin Oil	.09½	.09½	.09½
200 red Paraffin Oil	.09	.09	.09
Refined Wax:			
120-122 a.m.p., per lb.	.03⅞	.03⅞	.03⅞
125-127 a.m.p., per lb.	.04	.03⅞	.03⅞
130-132 a.m.p., per lb.	.04½	.04½	.04½
135-137 a.m.p., per lb.	.05¼	.05¼	.05¼
Petrolatum, in bbls., carload lots, per lb.:			
Dark green	.01⅞	.01⅞	.01⅞
Amber	.03⅜	.03⅜	.03⅜
Extra amber	.03¾	.03¾	.03¾
Cream	.06½	.06½	.06½
Lily white	.08½	.08½	.08½
Snow white	.09½	.08	

*Lighterage 6.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Jan. 3	Dec. 27	Dec. 20
Gasoline, U. S. Motor, 58-60 437, in cases.	.2390	.2390	.2390
Kerosene, standard white, in cases	.1715	.1715	.1715
Kerosene, water white, in cases	.1815	.1815	.1815
600 steam refined cylinder stock, in bbls.	.17	.17	.17
635, steam refined	.19	.19	.19
650, steam refined	.20	.20	.20
600, Pennsylvania flash	.23	.23	.23
630, Pennsylvania flash	.35	.35	.35
600, Warren E	.25	.25	.25
600, Oil City E	.24	.24	.24
Light 135 Bright Stock	.40	.40	.40
Dark 135 Bright Stock	.38	.38	.38

LOS ANGELES EXPORT PRICES

	Jan. 3		Dec. 27		Dec. 20	
Kerosene, water white	.04¾	.05	.04¾	.05	.04½	.04¾
U. S. Motor Gasoline, 53-55 437 endpoint	.06	.06⅛	.06	.06⅛	.06	.06⅛

CALIFORNIA CRUDE PRICES

Standard Oil Co.-Union Oil Co. (Effective April 1, 1927)*

Gravity—	Fullerton, Seal Beach, Long Beach, Huntington Beach, Richfield, Rosecrans-Dom'guez, Torrance-Inglewood 1	Whittier, La Habra, Montebello 2	Kern River, Newhall-McKittrick, Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills, Coyote 3	Santa Fe Springs, Coalinga 4	Wheeler Ridge 5	Santa Maria, Ventura, Orcutt, Salt Lake 6
14°	.85	.85	.75	.85	.75	.85
15°	.85	.85	.75	.85	.75	.85
16°	.85	.85	.75	.85	.75	.85
17°	.85	.85	.75	.85	.75	.85
18°	.85	.85	.75	.85	.75	.85
19°	.85	.85	.75	.85	.75	.85
20°	.85	.85	.77	.85	.76	.85
21°	.86	.85	.79	.86	.77	.85
22°	.87	.85	.81	.87	.78	.85
23°	.88	.85	.83	.88	.79	.85
24°	.89	.85	.85	.89	.80	.85
25°	.90	.86	.87	.90	.81	.86
26°	.92	.87	.89	.91	.82	.87
27°	.94	.88	.91	.92	.83	.88
28°	.96	.89	.93	.93	.87	.89
29°	.98	.90	.96	.94	.91	.90
30°	1.00	.91	.99	.95	.93	.91
31°	1.03	....	1.02	....	.95	.93
32°	1.06	....	1.05	....	.97	.95
33°	1.09	....	1.08	....	.99	.97
34°	1.12	....	1.11	....	1.01	.99
35°	1.15	....	....	....	1.03	1.01
36°	1.18	....	....	....	1.06	....
37°	1.21	....	....	....	1.09	....
38°	1.24	....	....	....	1.12	....
39°	1.27	....	....	....	1.15	....
40°	1.30	....	....	....	....	....
41°	1.33	....	....	....	....	....
42°	1.36	....	....	....	....	....

*Column 1—Long Beach, Seal Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Fullerton, 14 to 30 degrees; Torrance and Inglewood, 14 to 28 degrees; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.

Column 2—Whittier crude, 14 to 22 degrees; Montebello, 14 to 30 degrees.

Column 3—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset, Buena Vista and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.

Column 4—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura and Orcutt, 14 to 39 degrees. Posted only by Union Oil Co.

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans., N. & C. Tex., La.-Ark.	2 *Smackover, Ark.	3 *Stephens, Ark.	4 Gray County (Texas Panhandle)	5 Crane, Upton, Reagan, Crockett, Coutlietes (West Texas)	6 *Salt Creek, Wyo.	7 Grade B & Light *Crude (G. Coast)	8 Somerset (South Central Texas)
Below 24	....	.85	....	....	....	....	....	....
24 and above	....	1.00	....	....	....	....	....	....
Below 25	....	....	....	....	....	....	1.15	....
25 to 25.9	....	....	....	....	....	....	1.17	....
Below 26	....	....	....	....	.60	....	....	....
26 to 26.9	....	....	....	....	.60	....	1.19	....
27 to 27.9	....	....	....	....	.60	....	1.21	....
Below 28	(*)	....	1.00	....	....	....	....	....
28 to 28.9	1.12	....	1.02	.80	.60	....	1.23	....
29 to 29.9	1.14	....	1.04	.82	.60	1.14	1.25	....
30 to 30.9	1.16	....	1.06	.84	.60	1.16	1.27	....
31 to 31.9	1.18	....	1.08	.86	.60	1.18	1.29	....
32 to 32.9	1.20	....	1.10	.88	.60	1.20	1.31	1.05
33 to 33.9	1.22	....	....	.90	.60	1.22	1.33	1.07
34 to 34.9	1.24	....	....	.92	.60	1.24	1.35	1.09
35 to 35.9	1.26	....	....	.94	.60	1.26	1.37	1.11
36 to 36.9	1.28	....	....	.96	.60	1.28	....	1.13
37 to 37.9	1.30	....	....	.98	....	1.30	....	1.15
38 to 38.9	1.32	....	....	1.00	....	....	....	1.17
39 to 39.9	1.34	....	....	1.02	....	....	....	....
40 to 40.9	1.36	....	....	1.04	....	....	....	....
41 to 41.9	1.38	....	....	1.06	....	....	....	....
42 to 42.9	1.40	....	....	1.08	....	....	....	....
43 to 43.9	1.42	....	....	1.10	....	....	....	....
44 to 44.9	1.44	....	....	1.12	....	....	....	....
45 to 45.9	1.46	....	....	....	....	....	....	....
46 to 46.9	1.48	....	....	....	....	....	....	....
47 to 47.9	1.50	....	....	....	....	....	....	....
48 to 48.9	1.52	....	....	....	....	....	....	....
49 to 49.9	1.54	....	....	....	....	....	....	....
50 to 50.9	1.56	....	....	....	....	....	....	....
51 to 51.9	1.58	....	....	....	....	....	....	....
52 and above	1.60	....	....	....	....	....	....	....

Column 1—Magnolia Petroleum Co. posted new schedule September 14, making price below 30 gravity $1.05 per barrel, with 2 cents increase per degree higher in gravity, taking 30-30.9 gravity at $1.16 as basis, with a top price of $1.60 for 52 and above.

Oklahoma—Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., March 12; Carter Oil Co., The Texas Company, March 14.

North Central Texas—[Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas), Iatan and Panola (Magnolia only), Currie, Nocona, Moran and Corsicana light]; Texas, Prairie, Sinclair and Gulf, March 12; The Texas Company, Humble Oil & Refining Co., March 14.

Kansas—Prairie, Sinclair, March 12; Carter, Texas, March 14.

Arkansas and North Louisiana—[Caddo, Bull Bayou, Crichton, De Soto, Haynesville, Homer and El Dorado only]; Standard Oil Co. of Louisiana, March 14; The Texas Company, March 14; Magnolia Petroleum Co., Pine Island, Haynesville and Bull Bayou, El Dorado, Gulf Pipe Line Co., March 14.

Column 2—November 19, Louisiana Oil & Refining Co. On November 21, Standard Oil Co. of Louisiana, Magnolia Petroleum Co., Gulf Refining Co., and Atlantic Producing Co.

Column 3—Atlantic Oil Producing Co., March 14.

Column 4—Humble Oil & Refining Co. and Gulf Pipe Line Co., March 14. On August 23 Magnolia Petroleum Co. posted flat 75 cents.

Column 5—Humble Oil & Refining Co., August 23; Kay County Gas Co., Magnolia Petroleum Co., and Gulf Pipe Line Co., August 24.

Column 6—Midwest Refining Co., March 12. All crude over 37 gravity, $1.30 per barrel.

Column 7—Humble Oil & Refining Co. and other major buyers (schedule ends "35 and above"), March 14, with exception of Magnolia Petroleum Co., which stops at 31 degrees gravity. Sun Pipe Line Co. posts 2 cents differential for each degree above 35 gravity and $1.47 for 40 gravity and above.

Column 8—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

*Prices for crude below 28 gravity; Oklahoma, Kansas and Texas, Magnolia Petroleum Co., $1.10, March 12; Arkansas, North Louisiana, March 14. Other companies, 2 cents less for each degree, with exception of Humble Oil & Refining Co., which pays 90 cents for crude below 25 degrees gravity, effective November 16.

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

*Corsicana heavy (March 14, 1927)	$1.00
Other fields	See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

*Carson County	$ .75
*Hutchinson County	.75
*Wheeler County	.75
Gray County	See gravity table

*Humble Oil & Refining Co.
Magnolia Petroleum Co., Gulf Pipe Line Co., and Kay County Gas Co., August 23.

*Iatan	Same as North Texas
Crane-Upton-Crockett	See gravity table
†Glasscock	$ .80

*Includes Howard County and Westbrook Fields. Kay County Gas Co. pays $1.05 for Howard County crude, effective May 21.
†Magnolia Petroleum Co., Oct. 24.

ARKANSAS-NORTH LOUISIANA

Cotton Valley (Dec. 2)	$ .85
Bellevue (Feb. 24, 1927)	1.20
Urania (Nov. 18, 1927)	.75
East El Dorado (Sept. 20)	.90
Other fields	See gravity table

Note—Cotton Valley and Bellevue, Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co. and Magnolia Petroleum Co.; Urania, Louisiana Oil Refining Corp.; East El Dorado Magnolia Petroleum Co., Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, High Island, Pierce Junction and Spindletop.)

†Grade A (March 14)	$1.20
Grade B	See gravity table
*Jennings, La. (March 14)	$1.05
†Saratoga, Batson, Dayton (March 14, 1927)	$1.20
‡Markham (March 14)	1.00

*Gulf Pipe Line Co. †Sun Pipe Line Co. ‡Humble Oil & Refining Co. and other major buyers. §The Texas Company.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

*Luling (May 5)	$1.00
†Mirando (March 14)	1.00
Rockdale-Minerva (April 15):	
Below 38 gravity	1.25
38-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31
*Thrall	
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

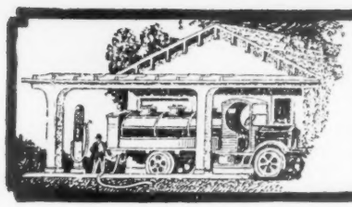
*Posted by Magnolia Petroleum Co. Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crowen Central Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.
(Effective March 14)

Rock Creek, Wyo (March 12)	$1.25
Salt Creek	See gravity table
Big Muddy (March 12)	$1.25
Mule Creek (May 1)	1.10
Grass Creek, heavy	.90
Grass Creek, light	1.33
Elk Basin (March 12)	1.33
Lance Creek (March 12)	1.33
Poison Spider	1.00
Notches	.65
Rex Lake (February 22)	1.10
Osage	1.33
Lost Soldier (contract)	.95
Greybull-Torchlight	1.33
Hamilton Dome	.85
Cat Creek (Mont.)	1.33

(Continued on Page 134)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Jan. 3.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Chicago dist.	16.0	18 0	2.0	12 0
Decatur, Ill.	13.5	15 5	2.0	12.3
E. St. Louis	15.1	17.35	2.0	11.2
Joliet	16.4	18 4	2.0	12.3
Peoria	12.0	12.0	2.0	12.1
Quincy	16 2	18 2	2.0	11 9
Davenport, Ia.	15.5	17.5	3.0	12 3
Des Moines	15.9	17.9	3.0	12.3
Keokuk	17.5	19.5	3.0	12 3
Sioux City	17.1	19 1	3.0	11 9
Duluth, Minn.	15 5	17 5	2.0	12.9
Minneapolis	14.0	14.0	2.0	12 9
Mankato	14.1	16 1	2.0	12 7
LaCross, Wis.	17.2	19 2	2.0	13.0
Milwaukee	16.1	18 1	2.0	11 9
Madison	16 3	18 3	2.0	12.1
Detroit, Mich.	15 8	17.8	3.0	13 7
Grand Rapids	14 0	16.0	3.0	13 6
Saginaw	17 9	19.9	3 0	13 8
Evansville, Ind.	17 0	19 0	3 0	13 0
Ft. Wayne	16.4	17.4	3.0	13.4
Indianapolis	14 2	15 2	3.0	12.2
South Bend	17 4	17.4	3.0	13.4
Fargo, N. D.	15 0	17.0	2 0	14 9
Huron, S. D.	19 5	21 5	4.0	13 9
Sioux Falls	15.0	17.0	4 0	13 4
*K. C., Mo.	14 9	16.9	3.0	10 6
*Springfield	16 8	18.8	3 0	11 5
*St. Louis	15 6	17 9	2.5	11 3
*St. Joseph	14 5	16 5	3.0	11.2
Wichita, Kans.	12.8	12.8	2.0	10.8
Bartlesville, Ok.	15.8	17.8	3.0	10 8

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	14.7	9 5
V. M. & P. naphtha	16 2	11.0
Cleaner's naphtha	18.0	12 0
Stanisol	19 0	12 5

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9 0
100 to 799 gallons	8.0
800 or more gallons	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

Tank wagon prices of gasoline subject to discount of 1 cent a gallon on dumps of 50 gallons or more throughout territory except Chicago district where discount applies only to dumps of 100 gallons. Kerosene subject to 1 cent discount on dumps of 50 gallons or more.

Outside the Chicago district, the following quantity discount schedule is in effect on monthly tank wagon deliveries of gasoline; 6,000 gallons or more, 1½ cents; 10,000 gallons or more, 2 cents; 15,000 gallons or more, 3 cents. These discounts include the 1 cent allowed on dumps of 50 gallons or more at one delivery.

Within the Chicago district, the following quantity discount schedule is in effect on tank wagon deliveries of gasoline; 750 to 2,000 gallons, one-half cent; 2,000 to 3,000 gallons, three-fourths cent; 3,000 to 6,000 gallons, 1 cent; 6,000 to 10,000 gallons, 1½ cents; 10,000 to 15,000 gallons, 2 cents; 15,000 gallons or more, 3 cents. These discounts are in addition to the special discount of 1 cent on dumps of 100 gallons or more at one delivery.

If the quantity bought during the year is equal to or exceeds 12 times the agreed monthly quantity, the discount is paid or credited on the entire quantity at the close of the term less the monthly payments made during the year.

*State tax 2 cents; remainder city tax.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
All Ohio points	17.0	19.0	3.0	14.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.*

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Dallas, Tex.	14.0	17.0	3 0	11 0
Fort Worth	14.0	16 0	3 0	10 0
Houston	13 0	15 0	3.0	15 0
San Antonio	13 0	15.0	3.0	10 0
El Paso	14 0	15 0	3.0	16.0
Texarkana	14.0	15.0	3.0	12.0
Muskogee, Ok.	15.0	18 0	3 0	10.0
Okla. City	13 0	14 0	3.0	10 0
Tulsa	13 0	14 0	3.0	10 0
Ft. Smith, Ark.	14 0	17 0	5 0	12 0
Little Rock	16.0	16.0	5.0	11.0

*The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, one-half cent; over 2,000 gallons, three-quarters cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cents; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons a month, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases in the tank wagon discounts.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
*N. Orleans, La.	15.5	17 5	3 0	14 0
Baton Rouge	14 0	17 0	2.0	12 5
Alexandria	15 0	18.0	2 0	14 0
LaFayette	15 0	18.0	2.0	13 5
Lake Charles	15 5	18 5	2 0	14 0
Shreveport	15 5	18 5	2.0	13 5
Kn'xville, T'nn.	19.5	22 5	3 0	15 0
Memphis	15.0	16 5	3 0	14.0
Chattanooga	19.5	22 5	3 0	15 0
Nashville	18 0	21 0	3 0	15.0
Bristol	19 0	22 0	3.0	14 0
Lit. Rock, Ark.	16.0	16.0	5.0	12.0

*Tax of 3 cents includes city tax of 1 cent.
†Louisiana kerosene prices include 1-cent state tax and 1-cent parish tax.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Atlanta, Ga.	17.0	19.0	4.0	14.0
Augusta	19.0	22 0	4 0	16 5
Macon	16.0	19.0	4.0	13.5
Savannah	17 0	19 0	4 0	14.5
Birm'h'm, Ala.	18.0	21.0	4.0	14.5
Mobile	17.0	20.0	4.0	14.0
Montgomery	16.0	19.0	5.0	15.5
Clarke'le, Miss.	17.0	20.0	4.0	11.5
Jackson	17.0	20.0	4.0	11.5
Natchez	16.5	19 5	4.0	14 0
Gulfport	18 5	21 5	6 0	14 0
Vicksburg	16 5	19.5	4 0	14 0
Jack'ville, Fla.	18.0	21.0	5.0	11.5
Miami	20.0	23.0	5.0	14.5
Pensacola	19.0	22.0	5.0	13.0
Tampa	18.0	21.0	5.0	13.0
Lexington, Ky.	18 0	21.0	5 0	15 5
Covington	19.0	22 0	5 0	15 5
Louisville	18.0	21.0	5.0	15 0

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline. Kerosene prices in Georgia includes 1 cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene only. Pensacola tax includes 1 cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Pittsburgh, Pa.	16 0	*22 0	...	14 0
Philadelphia	15.0	*21.0	...	14.0
Scranton	16 0	*22 0	...	14 0
Allentown	16 0	*22.0	...	14 0
Altoona	16 0	*22 0	...	14.0
Erie	12 0	*18.0	...	14 0
Dover, Del.	19 0	22 0	3.0	14 0
Wilmington	19.0	22 0	3.0	14.0
Spring'd, Mass.	18 0	18 0	...	15.0
Worchester	17 0	17 0	...	15 0
Boston	17 0	17.0	...	15 0
Providence, R.I.	19.0	19 0	2 0	15 0
Hartford, Conn.	20.0	20 0	2 0	15 0
New Haven	20 0	20 0	2.0	15.0

*Includes tax of 3.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the state.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Albany, N. Y.	17.0	19 0	...	15 0
*New York	17 0	19.0	...	15 0
Buffalo	17.0	19 0	...	14 0
Rochester	13 0	16 0	...	14.0
Syracuse	17 0	19 0	...	15 0
Boston, Mass.	17 0	19 0	...	15.0
Augusta, Me.	21.0	23 0	4.0	15.0
M'nch't'r, N.H.	19.0	23.0	4.0	15.0
Burlington, Vt.	20 0	22.0	3.0	15.0

*Price in steel barrels.

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
San Francisco	17 0	21.0	3 0	15 5
Pueblo	18.0	18.0	3 0	15 5
Los Angeles	16 5	20.5	3.0	15 5
Reno, Nev.	22 0	26 0	4 0	19 0
Portland, Ore.	17 5	21 5	3.0	16 5
Seattle, Wash.	16 5	20 5	3 0	16 5
Tacoma	16.5	20.5	2 0	16 5
Spokane	20.5	24.5	2 0	20 5
Phoenix, Ariz.	23.0	27.0	4.0	20.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Atlantic City	18.0	20 0	2 0	14 0
Newark, N. J.	18 0	20 0	2 0	14.0
Annapolis, Md.	20.0	23 0	4 0	12.0
Baltimore	20.0	23 0	4 0	10 0
Cumberland	20 0	23 0	4 0	14 0
Washington	18.0	21 0	2.0	12 0
Danville, Va.	20 5	...	4 5	14.0
Norfolk	20 5	23 5	4.5	12 0
Petersburg	20 5	23.5	4.5	14 0
Roanoke	20 5	23.5	4 5	14.0
Richmond	18.5	21 5	4.5	14 0
Ch'rslt'n, W.Va.	20 0	23.0	4 0	14 0
Keyser	20 0	...	4 0	14.0
Parkersburg	17 0	20.0	4 0	14.0
Wheeling	20 0	23 0	4 0	14.0
Charlotte, N. C.	20 0	23.0	4 0	14 0
Hickory	20.0	23 0	4.0	14.0
Mt. Airy	20 0	23 0	4.0	14 0
Salisbury	20 0	23 0	4 0	14 0
Charlst'n, S. C.	20 0	23 0	5.0	14.0
Columbia	20.0	20 0	5.0	14.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Omaha	14.25	16 26	2 0	12.25
McCook	14 75	14 75	2 0	11.50
Norfolk	16 75	18 75	2.0	12.75
N. Platte	17 75	19 75	2.0	13.50
Scottsbluff	17.25	19 25	2.0	13.00

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'd's tax	tank wagon
Denver, Colo.	16.0	18.0	3.0	12.5
Pueblo	16.0	18.0	3.0	14.5
Grand Jnctn.	20 5	22.5	3 0	18.0
Casper, Wyo.	17 0	19 0	3.0	13 0
Cheyenne	18 0	20 0	3.0	14.5
Butte, Mont.	22.0	22 0	3.0	19 0
Helena	22.5	24 5	3.0	19 0
Salt L'ke, Utah	20 0	21.0	3.5	17.0
Boise, Idaho	23 5	25 5	4.0	19.0
Twin Falls	23 5	25 5	4.0	19.0
Albu'que, N. M.	21 0	24.0	5.0	17.0

TANK WAGON CHANGES

December 15: Standard Oil Co. of Louisiana decreased kerosene 1 cent throughout Alabama.

December 19: Magnolia Petroleum Co. increased kerosene 1 cent in Little Rock, Ark., from 11 cents to 12 cents.

December 21: Standard Oil Co. of Louisiana decreased kerosene 1 cent throughout Florida.

December 22: Standard Oil Co. of Louisiana reduced kerosene 1 cent in Clarksdale, Miss., and decreased the gasoline tank wagon and station prices 3 cents in Macon, Ga., to 16 and 19 cents.

December 24: Standard Oil Co. of Louisiana reduced the gasoline tank wagon and station prices 3 cents in Montgomery, Aal., to 16 and 19 cents.

December 26: Continental Oil Co. increased the gasoline station price 2 cents in Denver, Colo., to 18 cents.

December 29: Magnolia Petroleum Co. reduced the gasoline tank wagon and station prices 1 cent in Texarkana, Tex., to 14 cents and 15 cents

January 1: Standard Oil Co. of New York increased the gasoline tank wagon and station prices 1 cent throughout New Hampshire to equalize the increased tax in that state from 3 to 4 cents.

December 31: Continental Oil Co. increased the gasoline tank wagon 1 cent and the station price 3 cents in Pueblo, Colo., making the new prices 16 cents and 18 cents.

January 3—Standard Oil Co. of Indiana reduced the tankwagon and tank car prices on their various special naphthas These changes are shown in the regular price table.

PENNSYLVANIA MARKET

OIL CITY, Pa., Dec. 31.—During the past week there has been a fair movement of gasoline and naphtha in the Pennsylvania refinery district with no price changes. Kerosene continued in good demand. Wax was stronger. Fuel oil was in fair demand without price changes. Neutrals were also moving satisfactorily although not better than during the previous week. Bright stocks were firm. Cylinder stocks were holding their own and were firm.

PIONEER ANSWERS LAST CALL

Dr. J. C. W. Bland, aged 68, who with Dr. Fred S. Clinton of Tulsa are credited with having drilled the first commercial oil well in the vicinity of Tulsa, died Monday in Tulsa after a prolonged illness. Doctor Bland was born near Centerville, Iowa, and came to Tulsa in 1884 when that city was a small trading post. In 1901, he and Doctor Clinton financed the drilling of an oil well between Tulsa and Red Fork within the present city limits of Tulsa. The well came in as a small producer at a depth of 600 feet and started Tulsa's first oil excitement.

DEATH OF J. F. ZAGST

J. F. Zagst, aged 62, a brother of S. R. Zagst, one of the best known rig builders in North Louisiana, East Texas and Arkansas oil territory, died December 28, in an El Dorado hospital after a short illness. He was well known in the Pennsylvania fields having been born in Clarion County, in 1865, and spent his life there until six years ago when he came to El Dorado.

RULING ON TAXATION

WASHINGTON, D. C., Dec. 31.—The United States Board of Tax Appeals has rendered a decision in the case of J. E. Murphy against the Commissioner of Internal Revenue holding that profits derived from the sale of undivided interests in oil and gas underlying land owned for more than two years prior to the date of conveyance is capital gain as defined in Section 206 of the Act of 1921.

CRUDE OIL PRICES

(Continued from Page 133)

Sunburst (Mont.)	1.35
Artesia (March 12)	1.00
Hogback (N. Mex.) (March 14)	1.38

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES
Joseph Seep Purchasing Agency
(Effective December 17)

Penna Grade Oil in New York Transit Line (New York)	$2.80
Bradford District Oil in National Transit Lines (Pennsylvania)	2.80
Penna Grade Oil in National Transit Lines (Pennsylvania)	2.65
Penna Crude Oil in Southwest Pennsylvan'a Lines (West Virginia)	2.65
Penna Grade Oil in Eureka Pipe Line lines (Pennsylvania)	2.60
Penna Grade Oil in Buckeye Pipe Line lines (Ohio)	2.35
Cabell Grade Oil in Eureka Pipe Line lines (West Virginia) (December 4)	1.50
Corning 35-cent grade oil in Buckeye Pipe Line Co.'s line (December 19)	1.45
Corning 25-cent grade oil in Buckeye Pipe Line Co.'s lines (December 19)	1.55
Somerset Oil in Cumberland Pipe Line lines (Kentucky) (December 4)	1.60
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (August 1)	.95
Keister (Pennsylvania) (August 1)	1.10

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective March 14)

Lima	$1.71
Wooster	1.57
Illinois	1.60
Indiana	1.48
Princeton	1.60
Plymouth	1.33
Waterloo (Nov. 17, 1926)	1.35
*Western Kentucky	1.33
**Saginaw, Mich., Saginaw Sand (May 27)	2.05
**Saginaw, Mich., Berea Sand (May 27)	1.95
†Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 16)	1.50
‡Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (March 16, 1927)	1.50
§Oil Springs (Canada)	2.18
§Petrolia (Canada)	2.11

*Posted by Ohio Oil Co.
†Posted by Paragon Development Co.
‡Posted by Stoll Oil Refining Co.
§Posted by Imperial Oil Co., Ltd.
**Posted by Sun Oil Co.

MEXICAN CRUDE

Note—Due to the fact that the exportation of Tuxpam light crude oil has become a negligible factor, prices will no longer be published.

*Panuco heavy (f.o.b. Mex. ports)	$1.15

*17.496 cents tax.

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Very Little Activity in Oil Securities

Some Selling Believed for Purpose of Establishing Tax Losses. New Year Starts With Hopeful Expectations

The last week of 1927 offered little activity in the oil securities. There was some selling of the oils, but it was believed that it was due mainly to establish losses for the purpose of computing income tax returns.

The new year is starting with hopeful expectations for the oil issues as a group; they were practically the only group which failed to share in substantial advances during 1927.

Mexican Petroleum

Mexican Petroleum Corp. stock reflected the better feeling regarding the oil outlook in Mexico by a rise of 60 points in a day to $310 a share. It is controlled by the Pan American Petroleum & Transport Co., which recently discontinued dividend payments.

Standard of New Jersey

Despite the fact that securities of some of its subsidiaries have steadily forged ahead in the past few months, stock of Standard of New Jersey remains relatively unchanged around $40 a share. International Petroleum, Ltd., stock was the latest to advance, reaching a high record for all time above $39 a share recently. Stock of Imperial Oil, Ltd., in 1927 almost 100 per cent, while Humble Oil & Refining stock forged ahead steadily.

Union Tank Car

Union Tank Car stock has been somewhat active and it reached a high record price of $127 a share. It is rumored the dividend rate will be increased to $7 or $8 a share some time in 1928.

Establishing Losses

Much of the recent selling of oil securities was attributed in the financial district to year-end sales for the purpose of establishing losses for tax purposes. It is pointed out that oils were about the only group in which such losses could be generally established.

Northern Pipe Line

Stockholders' protective committee of the Northern Pipe Line Co., headed by Benjamin Graham, chairman, has sent a letter to stockholders seeking proxies for the annual meeting on January 19. The letter says that a large part of the company's capital is not used in the pipe line business and is held in a sort of involuntary investment trust yielding only 3½ per cent after income taxes. The letter states that "it is evident in the interests of the stockholders that a great part of these cash assets not employed and not needed in the pipe line business should be returned to them for investment as they see fit." The committee states that it represents in excess of 6,500 shares in the company's stock.

There are 40,000 shares of Northern Pipe Line stock outstanding, of $100 par. The Rockefeller Foundation owned 9,000 shares, or 22½ per cent of the total, as of December 31, 1926.

An answer to the committee's letter will be made by the Northern Pipe Line Co. management in the near future.

Richfield Oil

Earnings of the Richfield Oil Co. of California for the fourth quarter of 1927, with last half of December estimated, are expected to equal $1.10 a share on the 1,168,965 outstanding common shares (par $25), according to James A. Talbot, president. These earnings are after giving effect to the largest write-offs for depletion and depreciation in the company's history. Fourth quarter earnings exceed four times dividend requirements for the period.

The increase in fourth quarter earnings over the third quarter has been due largely to a substantial increase in the company's crude production by the completion of new producing wells and success in the deep sand area of the Signal Hill Field. Fourth quarter production will exceed that of the preceding three months by about 200,000 bbls.

Sales continue on a satisfactory scale, Mr. Talbot adds. Last quarter sales, with the last half of December estimated, will aggregate about $11,300,000, compared with $8,661,000 in the corresponding period of 1926.

Simms Petroleum

Thomas J. Megear, James H. Barr and Stephen J. Leonard have been elected directors of the Simms Petroleum Co. in place of Matthew C. Brush, Harry Bronner and John J. Watson, Jr. Thomas J. Megear and Ernest Stauffen, Jr., were also elected to the exective committee.

Mr. Megear, a partner in the banking firm of Luke, Banks and Weeks, is a director of the Skelly Oil Co., Pennok Oil Co., Maracaibo Oil Exploration Corp. and a number of other oil companies. Stephen J. Leonard is a member of S. J. Leonard & Co., a director of Arnold Constable & Co., Juilus Kayser & Co. and other corporations.

The company states it is understood that the holdings of the American International Corp. in Simms Petroleum have been sold and that new directors represent substantial new holdings in the stock. There will be no change in management.

Summary of Years

The year just closed proved an active one in the stock market for oil shares. While the general stock market was impressively higher a greater part of the 12 months, market for oil shares at times was decidedly weak.

From this lower tendency, occasioned by reduced oil prices, income and dividends, a number of oil shares emerged with decided strength and to record high prices, in some cases.

A variety of reasons might be advanced for diversity of price movement, but they may be summed up in the vagaries of oil itself—some companies make more money on low crude oil prices while others make less or lose money. Added to this situation was one in the general market of people with enormous trading profits in other stocks buying issues like Standard Oils, Texas, Gulf and Shell purely on their record of earnings and dividends. They found better yields in these proven oils than other classes of stocks and were willing to buy them for a pull.

Of a group of 34 selected oil shares, listed and unlisted, 18 sold at prices lower than any level reached during 1926. At the year end most of this group were still near the 1927 lows; but, to carry out the varying price swings, four stocks which sold lower in 1927 than 1926 made new highs during 1927 and closed near the top prices.

No less than 11 different oil shares sold at higher prices during 1927 than 1926 and held their advances pretty well to the close of the year. Of this group, seven sold at the highest prices on record, these being Houston Oil, Lago Oil, Gulf Oil, Imperial Oil, International Petroleum, Standard Oil of Indiana and Vacuum Oil.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

State—	Par	Clos. Quot. Dec.31	Clos. Quot. Dec.27	1927 High	1927 Low	1926 High	1926 Low	1925 High	1925 Low
Amerada Corp.	..	31⅛	31	37⅛	27⅝	32⅞	24¾	..	..
Atlantic Refining, com.	100	107	107	131⅝	107	128⅜	97	117½	95½
Barnsdall "A"	25	25⅛	24⅜	35½	20⅜	32½	23½	33½	18⅜
California Petroleum, com.	25	24⅜	23⅞	32⅞	20	38⅛	30⅞	34⅜	23⅜
Houston Oil	100	156½	157⅜	175⅜	60¼	75	50¼	85	50
Independent Oil & Gas	..	25¼	25⅜	32⅜	17⅝	34	20¼	41⅜	13½
Louisiana Oil	10	10½	10	18⅛	10½	19⅝	12	23⅜	13⅜
Maracaibo	..	16	15¼	22⅜	12	27⅜	18⅜	35½	20⅜
Marland	..	35	34⅝	58½	31	63⅜	41¼	60⅛	31⅝
Mid-Continent Petroleum	..	29¼	28⅜	39⅝	25½	41	25⅜	38	25⅜
National Supply	50	95½	95⅜	95⅜	76	84⅞	55½	71	54⅜
Oil Well Supply	25	35⅞	37	44⅝	31¼	36	30	38	33⅜
Pan American, B	50	43⅞	40⅞	66⅜	45⅛	72⅜	56⅛	83⅞	59½
Pan American, Western B	..	19⅝	20⅛	37⅞	16¾	46	34	94⅝	37¼
Phillips Petroleum	..	40⅝	40⅞	60¼	36½	54⅞	42⅛	47⅛	47¼
Producers & Refiners	50	25	25⅝	33⅞	16¾	26	11	32⅝	12½
Pure Oil, com.	..	25⅞	26¼	33½	25	31	25⅜	33⅜	32½
Royal Dutch, N. Y., sh.	13.40	47½	47⅞	54½	44¼	57⅜	49⅜	57⅜	48¼
Shell Transport	10	42½	43⅛	49	41½	48⅞	42	49	30⅜
Shell Union, com.	..	25½	25⅜	31⅝	24⅝	30⅞	24	28⅝	21⅝
Simms Petroleum	10	23⅝	24¼	23⅞	14¼	25⅝	16½	28½	18⅜
Sinclair Consolidated	..	20⅞	21	22⅜	15⅛	24⅞	16⅜	24⅞	17
Skelly Oil	25	27¼	24¼	37⅜	24⅛	37⅛	27	32½	21⅜
Standard of California	25	55⅞	55⅞	60⅜	50⅜	63½	54	67¼	52½
Standard of New Jersey, com.	25	39⅜	39⅜	41⅜	35⅛	46⅝	37½	47½	38⅜
Standard of New York	25	31	31½	34⅛	29⅜	47¼	30⅝	48⅝	40
Sun Oil Co.	..	*31½	32	34⅞	30	41¼	30½	43⅞	38½
The Texas Company	25	54	52⅜	58	45	58	48	55	43⅝
Texas Pacific Coal & Oil	10	14½	14⅛	18⅞	12	19½	12½	23¼	11
Tide Water Associated Oil	..	17¼	17¼	19⅛	15⅜	21	17	..	..
Transcontinental	..	8⅞	9⅛	10⅜	3¾	5½	3	5⅝	3½
Union Oil of California	25	43⅜	44	56½	39⅝	53⅜	37¼	43⅝	38½
Union Tank, com.	100	122¼	121	126	94	120⅜	84½	‡134	118
White Eagle Oil & Refining	..	21	20½	27½	21¾	29¾	25⅛	28¾	25⅝
Standard Oils									
Anglo-American Oil	£1	*18½	19	21⅝	17⅛	19⅜	16½	26¾	17½
Borne Scrymser	25	*57	57	69	49⅛	75	65	‡240	205
Buckeye Pipe Line	50	*57	57	59	45	59½	42	72	63½
Chesebrough Manufacturing Co.	25	*115	117	126	76½	81¼	63	74	48¼
Continental	10	21	19⅝	22⅝	16¾	25⅞	10½	31⅜	21⅞
Cumberland Pipe Line	100	*92	88	‡137	90	137	102	156	128
Eureka Pipe Line	100	*64	65½	66	47	43¾	43	96	61¼
Galena Signal, com.	100	3⅝	4	13½	4½	32⅛	9⅞	68½	23½
Humble Oil & Refining Co.	25	67½	67	67⅜	54	99⅝	52	99	40½
Illinois Pipe Line	100	*174	175	181½	123⅜	144	131	154½	124
Imperial Oil	..	58¼	59	64⅜	37⅜	39⅜	32½	39¼	27¼
Indiana Pipe Line	50	*75½	77	93	61	68	52¼	84	57⅛
International Petroleum Co.	10	36⅝	35⅞	36⅜	28¼	35¼	28⅜	25⅜	20⅛
National Transit Co.	12.50	*20½	20⅝	23¼	13¼	30⅜	27¼	25½	16½
New York Transit	100	*37½	38	42	31⅛	61½	27¼	70	50
Northern Pipe Line	100	*92	92	96	70	80½	64	88	67½
Ohio Oil Co.	25	65⅝	65⅝	66	52	67⅝	55⅜	75¼	60
Penn-Mex Fuel	25	*37	36	36⅛	12	24¼	15	44	19
Prairie Oil & Gas	25	49	49⅜	55½	45⅝	60¼	49	65½	45⅞
Prairie Pipe Line	100	185	188½	189¼	132	137½	122½	129¾	105
Solar Refining Co.	100	*176	175	‡201½	178	212	184½	259	200
South Penn Oil	25	*28	37⅜	41½	34½	50	30	‡197	129
Southwest Pa. Line	100	*72	72	78	55½	56	47½	84	50
Southern Pipe Line	50	*20	20½	39	18½	27	34	‡103	63
Standard of Indiana	25	78⅝	78¼	80¼	64⅝	70½	60½	70¾	69¼
Standard of Kansas	25	15	15½	20⅞	15⅝	36½	16½	45	30
Standard of Kentucky	25	124⅜	122½	125½	111½	134⅜	107	137	114⅜
Standard of Nebraska	25	41½	41⅜	49½	43	51⅛	42	‡270	231
Standard of Ohio, com.	100	79¼	78½	81½	72	362	192½	369	338
Swan & Finch, com.	25	*15½	17½	21	14½	21	18	27	12
Vacuum Oil	25	139¾	140½	147	95½	109⅜	94⅛	109½	80½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	116	113½	113½	86¼	95	82½	98¼	63½

*Bid, no sales. ‡Old stock. †New stock. §Ex-dividend.
Quotations furnished by W. J. Wollman & Co.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Dec. 31	62.09	Nov. 28	62.92	Oct. 24	60.45
Dec. 27	62.86	Nov. 21	63.66	Oct. 17	59.22
Dec. 19	63.24	Nov. 14	62.78	Oct. 10	59.20
Dec. 12	62.07	Nov. 7	61.30	Oct. 3	60.97
Dec. 3	62.06	Oct. 31	69.98	Sept. 26	61.30

CALIFORNIA MARKET SHOWING NO CHANGES

LOS ANGELES, Calif., Dec. 30.—The California oil market has not shown any change of any consequence during the past week. Gasoline for domestic use continues firm although there has been a marked falling off in consumption due to a prolonged spell of rainy weather. Gasoline for out-of -state use is still selling at from 7 to 7¼ cents in most cases, this market being weak. Export gasoline in tankers is holding firm at from 6 to 6⅛ cents with a number of sales being made at this figure.

Figures just released by the United States Bureau of Mines covering November operations show that although gasoline production decreased under the previous month's output, there nevertheless was an increase in stocks of 56,528 bbls. At the end of November, total gasoline stocks on hand were 11,364,829 bbls. More of the California refiners are producing cracked gasoline and production by such means in November increased to 499,460 bbls.

The natural gasoline market remains unchanged. It is encouraging to natural gasoline manufacturers that during November production decreased by 274 bbls. per day while consumption increased by over 2,401 bbls. daily. Daily average utilization was 3,806 bbls. more than average production and stocks decreased during the month by 114,163 bbls. At the end of November there was a total of 368,322 bbls. of natural gasoline on hand which is approximately 18 days' supply at the current rate of consumption.

The fuel oil market continues soft. Statistically fuel oil and heavy crude are weakest of all oils. During November, although fuel oil production was less than in October, stocks of heavy crude including all grades of fuel increased by 468,952 bbls. At present there is nothing in sight which would indicate that the fuel oil market will improve to any degree.

UNIVERSITY ROYALTIES

AUSTIN, Tex., Jan. 2.—December oil royalty payments to the University of Texas from production on its lands in Reagan and Crane Counties will total $252,648, an increase of $1,608 over November. With this month's receipts, total fund of the university from this source is $7,917,122, all invested in Liberty Bonds. Royalty payments for December include Magnolia Petroleum Co., $5,655; Humble Oil & Refining, $27,210; Independent Oil, $4,007; Texon Oil & Land Co., $20,701; Pecos Oil, $9,233; Big Lake Oil, $68,654; Gulf Production, $4,012; Atlantic Oil, $59,710; Texas Corp., $592; Prairie Oil & Gas, $17,744, and Tidal Oil, $22,279.

SLIGHT ADVANCE IN GASOLINE IN DECEMBER

(Continued from Page 130)

Taxes have shown another increase during December and 1927 witnessed many changes. Of the 49 states, including the District of Columbia, all but New York and Massachusetts now have a gasoline tax. Twenty five states increased or adopted the gasoline tax during the year while New Hampshire joined this group on January 1 by increasing its tax from 2 cents to 4 cents. At present, the average tax in the 50 representative cities is 3.1 cents, compared to 2.47 cents on the first of January, 1927. It is also known that several states have contemplated acting upon new tax bills this year and just where this trend will stop remains problematical. At this period of abnormally low station prices the public does not object to increased taxes, for these have not kept pace with the price declines but after prices are returned to normal, taxes will no doubt receive more attention. Up to the present, every one favored some form of gasoline tax where the money was applied to the building of roads but the practice of increasing taxes has become so general and already set at such a high figure, there is a possibility some of this money will be diverted to pay other expenses after the road programs are completed, and gasoline taxes will continue to be increased because of the ease of collecting them.

GASOLINE PRICES EFFECTIVE JANUARY 1, 1928

Table showing gasoline tank wagon prices as of January 1, 1928, exclusive of taxes, in 50 representative cities, including the amount and the date of changes since December 1, 1927. High and low prices and state taxes also given.

	Prices Dec. 1	Dec. Changes		Prices Jan. 1	High and Low 1926		1925		Tax Jan. 1, 1928
Birmingham, Ala.	14.0	....	....	14.0	20.0	16.0	20.0	13.0	4.0
Phoenix, Ariz.	19.0	....	....	19.0	22.0	19.0	20.0	18.0	3.0
Little Rock, Ark.	11.0	..	....	11.0	18.0	14.0	19.0	12.0	5.0
San Francisco, Calif.	14.0	....	....	14.0	16.0	13.0	15.0	13.0	3.0
Denver, Colo.	13.0	....	....	13.0	20.0	16.0	20.0	12.0	3.0
Hartford, Conn.	19.0	8 18.0	....	18.0	21.0	17.0	21.0	15.0	2.0
Dover, Del.	16.0	....	....	16.0	20.0	17.0	21.0	15.0	3.0
Jacksonville, Fla.	13.0	..	....	13.0	19.0	12.0	19.0	12.0	5.0
Atlanta, Ga.	10.0	3 13.0	....	13.0	21.0	14.0	21.0	14.0	4.0
Boise, Idaho	19.5	....	....	19.5	24.0	20.0	21.5	15.0	4.0
Peoria, Ill.	9.2	....	....	9.2	19.2	10.5	19.2	10.5	2.0
Chicago, Ill.	14.0	....	....	14.0	18.0	15.0	18.0	13.0	2.0
Indianapolis, Ind.	10.2	....	....	10.2	19.2	16.2	19.2	13.2	3.0
Des Moines, Iowa	9.9	12 10.9 13	22 11.9	11.9	19.5	16.0	19.5	13.5	3.0
Wichita, Kans.	11.8	10.8	....	10.8	16.8	14.8	18.8	8.8	2.0
Louisville, Ky.	13.0	....	....	13.0	20.0	17.0	19.0	12.0	5.0
New Orleans, La.	12 5	....		12 5	17 5	13 5	18.5	11 5	†3 0
Augusta, Me.	17.0	..	....	17.0	21.0	17.0	22.0	15.0	4.0
Baltimore, Md.	16.0	....	....	16.0	19.0	15.0	19.0	13.0	4.0
Springfield, Mass.	17.0	8 18.0	....	18.0	21.0	17.0	21.0	15.0	...
Detroit, Mich.	11.8	....	....	11.8	19.8	16.8	19.8	13.8	3.0
Duluth, Minn.	12.5	....	....	12.5	20.5	15.5	20.5	13.5	2.0
Natchez, Miss.	12.5	....	....	12.5	18.5	15.5	18.5	11.5	4.0
Kansas City, Mo.	10.9	....	....	10.9	18.9	15.9	18.9	12.9	†3.0
Helena, Mont.	19.5	....	....	19.5	24.0	21.0	24.0	18.0	3.0
Omaha, Neb.	12.25	..	....	12.25	19.25	14.25	19.25	10.0	2.0
Reno, Nev.	18.0	....	....	18.0	19.5	16.5	18.5	16.5	4.0
Newark, N. J.	16.0	....	....	16.0	19.0	15.0	19.0	13.5	2.0
Albuquerque, N. M.	16.0	....	....	16.0	26.5	20.0	23.5	19.5	5.0
New York, N. Y.	17.0	....	....	17.0	21.0	17.0	22.0	15.0	...
Charlotte, N. C.	16.0	....	....	16.0	19.5	15.5	20.0	12.0	4.0
Fargo, N. D.	12.0	....	....	12.0	21.0	18.9	20.9	14.9	2.0
Cleveland, Ohio	14.0	....	....	14.0	20.0	16.0	18.5	15.0	3.0
Tulsa, Okla.	10.0	....	....	10.0	17.0	13.0	18.0	9.5	3.0
Portland, Ore.	14.5	....	....	14.5	16.0	13.0	15.0	13.0	3.0
Philadelphia, Pa.	14.0	8 15.0	....	15.0	20.0	17.0	21.0	15.0	†3.0
Providence, R. I.	17.0	....	....	17.0	21.0	17.0	22.0	15.0	2.0
Charleston, S. C.	15.0	....	....	15.0	19.5	15.0	20.5	12.5	5.0
Huron, S. D.	14.5	..	....	14.5	20.5	14.0	20.0	13.0	4.0
Memphis, Tenn.	12.0	....	....	12.0	18.5	13.5	18.5	10.5	3.0
Dallas, Tex.	11.0	....	....	11.0	17.0	13.0	18.0	10.0	3.0
Salt Lake City, Utah	17.5	3 16.5	....	16.5	22.5	18.5	21.5	17.5	3.5
Burlington, Vt.	17.0	..	....	17.0	21.0	18.0	22.0	15.0	2.0
Norfolk, Va.	16.0	....	....	16.0	19.0	15.0	20.0	14.5	4.5
Washington, D. C.	16.0	....	....	16.0	19.0	15.0	19.0	14.0	2.0
Charleston, W. Va.	16.0			16 0	19 0	15 0	19 0	14.0	4.0
Milwaukee, Wis.	13.1	....	....	13.1	19.1	16.1	19.1	13.1	2.0
Casper, Wyo.	14.0	....	....	14.0	20.0	17.0	20.0	15.0	3.0
Seattle, Wash.	14.5	....	....	14.5	16.0	13.0	15.0	13.0	2.0
Minneapolis, Minn.	11.0	....	....	11.0	20 2	15 2	20 2	13 2	2 0
Average price	14.21	....	....	14.29	19.717	15.713	19.647	13.629	3.100

†State tax 2 cents, remainder city tax. ‡Tax paid by dealer.

NEW ANTIKNOCK GASOLINE

CHICAGO, Dec. 31.—The Pure Oil Co. is now marketing a grade of antiknock gasoline that is known as "Ded-O-Knock." The new product, which is being refined at all of the Pure Oil Co. plants, is stated to have a greater efficiency than the former Energy gasoline of the company. It is distributed at all the stations of the company, the price being 3 cents above the regular gasoline price, except in Ohio where the price is 4 cents higher.

CONDITION OF EASTERN MARKETS UNCERTAIN

(Continued from Page 127)

Coast of 636,000 bbls., represented a daily movement of 91,000 bbls.

Imports from South America continue a feature of the incoming oil movement. During the week ended December 28 they aggregated 791,000 bbls., a daily average of 113,000 bbls., while imports from Mexico totaled 341,000 bbls. and averaged 49,000 a day. Imports from South America included a cargo of crude from Ecuador consigned to the Tide Water Oil Co.

Standard Oil Tanker Fleet

The tanker fleet of the Standard Oil Co. of New Jersey on December 1, 1927, consisted of 96 vessels aggregating 1,025,115 deadweight tons, of which 38 vessels, totaling 481,065 tons are under the American flag. Of the grand total, 32 vessels of 391,735 deadweight tons are motor driven. The size of the vessels comprising the Standard Oil Co. of New Jersey fleet ranges from about 3,000 to 21,260 deadweight tons. Included in the above figures for the Standard Oil group are three motor vessels, totaling 52,550 deadweight tons, which are under construction and it is expected will be delivered within two or three months.

Robert F. Hand, vice president and assistant general manager of the Standard Shipping Co., the shipping subsidiary of the Standard Oil Co. of New Jersey, has declared the trial run of the converted motor tanker James A. Moffett, Jr., one of the largest of the Jersey company's fleet, satisfactory, and the vessel has left New York harbor for Corpus Christi, Tex., to lift her first cargo of oil. About 75 invited guests were on board during the trial run.

Mr. Hand states that the company plans to develop a motorship fleet under the American flag and to train American engineers to handle the vessels. The Moffett was converted at the Titjen & Lang plant at a cost of about $500,000. She has a speed of about 11 knots.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports for the past three weeks; also monthly record for the past 12 months (figures in barrels):

	Week Ended Dec. 28	Dec. 21	Dec. 14
Gulf Coast	360,000	295,000	345,000
Pacific Coast	91,000	41,000	25,000
South America	113,000	198,000	165,000
Mexico	49,000	10,000	27,000
Total	613,000	544,000	562,000

Daily Averages by Months

	Gulf	Pacific	S. Am.	Mexico	Total
1927: Nov.	318,000	62,000	109,000	42,000	531,000
Oct.	314,000	98,000	91,000	38,000	541,000
Sept.	336,000	97,000	99,000	69,000	601,000
Aug.	397,000	90,000	78,000	80,000	645,000
July	406,000	83,000	49,000	78,000	616,000
June	378,000	118,000	47,000	68,000	611,000
May	332,000	58,000	53,000	91,000	534,000
Apr.	388,000	93,000	61,000	69,000	611,000
Mar.	345,0000	103,000	81,000	36,000	565,000
Feb.	379,000	89,000	48,000	40,000	556,000
Jan.	362,000	73,000	61,000	49,000	545,000
1926: Dec.	363,000	57,000	61,000	49,000	530,000

The foregoing figures are based on the carrying capacity of incoming oil-laden tankers.

TESTS SHOW SULPHUR CONTENT IN FUELS

(Continued from Page 131)

rapid and complete in the presence of finely divided metal, which is always present in used crankcase oil.

"4. The sulphuric acid thus formed is nearly insoluble in oils, and oils tend to "wet" the surface of metals in preference to aqueous solutions. Therefore, those metal parts on which the oil film is allowed to remain intact will be very little corroded even in the presence of sulphuric acid. This was found to be true. However, in bearings and on cylinder walls there is a continual tendency to rub off or squeeze out the oil more or less completely, particularly on stopping and starting the engine. Where the oil film is thus broken the acid suspended in the oil has a chance to attack the metal directly and does so. Dry sulphur dioxide, or even dry sulphur trioxide, will not corrode iron at ordinary temperature. Thus there is an initial period before sulphuric acid is formed during which there is no corrosion.

"The essential reactions involved in all this may be written thus:

"Sulphur compound+air in cylinder
$\rightarrow SO_2+H_2O+CO_2$

(2) In cool crankcase:
SO_2+O (air) $+H_2O$ (condensed vapor)
$\rightarrow H_2SO_4$

(3) On crank pin where oil film breaks:
$H_2SO_4+Fe \rightarrow FeSO_4+H_2$

(4) On crank pin as secondary reactions:
$FeSO_4+H_2O$ (nascent hydrogen)
$\rightarrow Fes+H_2O$
also possibly
$FeSO_4+4$ Fe (finely divided) $\rightarrow FeS+4FeO$

"The last compounds are not in aqueous solution, but under conditions of close contact at fairly high temperatures and pressures; which make for the formation of ferrous sulphide and oxide.

"These reactions may not adequately represent all the facts, but there is little doubt but that they give us a fair picture of the mechanism of sulphur corrosion under the conditions studied.

SOME DIFFERENCE OF OPINION ON MEXICAN OIL

(Continued from Page 32)

rights formerly acquired do not stand.

It is understood that the Mexican treasury is now preparing a bill that would impose a tax of 10 per cent on all revenues derived from rentals and royalties from oil properties.

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 31.—A statement has been authorized at the White House as coming from President Coolidge expressing the President's confidence that the oil legislation recently passed by both branches of the Mexican congress will provide a settlement for practically all questions relative to the petroleum dispute. This statement, however, says that the President has not seen the reports to the Department of State relative to the exact form of the proposed legislation concerning titles to land held there by United States citizens and corporations, so that he does not know to what extent this proposed action would settle the conditions in controversy. However, the President understands that the legislation would provide for settlement of all questions relative to the petroleum dispute.

BIDS FOR OIL AND GAS LEASES

The commissioners will receive sealed bids until 2 o'clock p.m., on January 10, for oil and gas leases as follows:

Cimarron County—Lot 3 of SW, Section 7-5n-5ecm, 36.50 acres; Lot 2 and SE NW, 18-5n-5ecm, 77.10 acres; Lots 3-4 and E half SW, 18-5n-5ecm, 154.89 acres; Lots 1-2 and NE NW, 19-5n-5ecm, 115.68 acres; Lots 3-4 and E half SW, 19-5n-5ecm, 156.33 acres; W half NW, 29-5n-5ecm; W half SE, 29-5n-5ecm; SW, 29-5n-5ecm; NE, 30-5n-5ecm; Lots 1-2 and E half NW, 30-5n-5ecm, 157.13 acres; SE, 30-5n-5ecm; Lots 3-4 and E half SW, 30-5n-5ecm, 158.05 acres; NE, 31-5n-5ecm; Lots 1-2 and E half NW, 31-5n-5ecm, 158.88 acres; SE, 31-5n-5ecm; Lots 3-4 and E half SW, 31-5n-5ecm, 159.61 acres; E half NE, 32-5n-5ecm; N half NW, 32-5n-5ecm; W half SE, 32-5n-5ecm; SW, 32-5n-5ecm.

Pottawatomie County—S half NW, 16-6n-5e.

The commissioners will receive sealed bids until 2 o'clock p.m., on January 17, for oil and gas leases as follows:

Kiowa County—25-7n-16w; 25-7n-16w; NE, 36-7n-16w; 13-7n-18w; 13-7n-18w.

DEATH OF ROBERT OGLESBY

Robert Oglesby, aged 61 years, who operated extensively in the Cushing Field in Oklahoma, died Sunday in Tulsa. Mr. Oglesby was the son of Richard James Oglesby, who was governor of Illinois during the Civil War. He came to Tulsa when he was 40 years old and entered the oil business, the Cushing Field being the scene of his operations.

NEW DEVELOPMENT COMPANY SHOWS IMPORTANCE ATTACHED TO RESEARCH

By N. O. Fanning
New York Bureau, The Oil and Gas Journal, Room 629, No. 101 Park Avenue, New York, N. Y.

NEW YORK, Jan. 2.—The emphasis being placed on technical research and development in the oil industry is a recognition of the fact that the growth of the oil business is largely the result of applying economic principles to technical and scientific developments, perfected by those outside of the oil industry as well as by those directly connected with it.

An understanding of this fact has caused the Standard Oil Co. of New Jersey to form a separate subsidiary to handle technical research and engineering development. This is the latest major development along the line within the petroleum industry, and follows the donation of funds by John D. Rockefeller and the Universal Oil Products Co. for research which enabled the American Petroleum Institute to carry out an organized program, still under way. Other oil associations, oil companies and individuals are giving more of their time to this type of work.

Industry Fundamentally Technical

There is hardly a branch of the oil business that does not lend itself directly to technical research. Crude petroleum, the raw product, is still an enigma to scientists, both as to composition and origin. Although more light is constantly being thrown on the problem it is still far from solution. Determination of the origin of crude oil alone might in itself lead to the solution of the quantity of petroleum available, through drilling and otherwise, for future generations. This in turn might bring an entirely new conception of oil values. It might eliminate the excessive price fluctuations so marked throughout the history of the oil industry.

Almost every branch of the sciences is applicable to the oil industry in one phase or another. First comes the geologist; next is the production engineer, who must combine the knowledge of a mining and mechanical engineer; the chemist comes in as a factor in the refining end of the oil business, and so on throughout the various ramifications of the industry.

The wide range of technical knowledge required in the oil industry alone is a matter of considerable wonder to scientists. It also makes the problem of organization of technical activities of the industry all the more difficult. In one sense it is best to have one man who combines the knowledge of the various sciences, but this is practically impossible as each branch of science requires life-long study and application. The specialist in one phase of a technical subject is growing to be considered the unit of personnel in research work, but it is patently necessary to have an extremely large staff of men when work is carried on in this way, and this in turn is practical only for an organization capable of making large appropriations for research.

Technical Subjects Outlined

The best outline of technical subjects applicable to the industry is that given in the report of the committee on technical relationships of the American Petroleum Institute as of October 4, 1927. The committee states:

"In addition to the basic sciences such as chemistry and physics, the subjects having technical features in which the petroleum industry is interested may be broadly classified as follows:

"Petroleum geology: The title of this subject is descriptive of the matters which would be considered under it. It is a very definite subdivision in the broad field of petroleum technology.

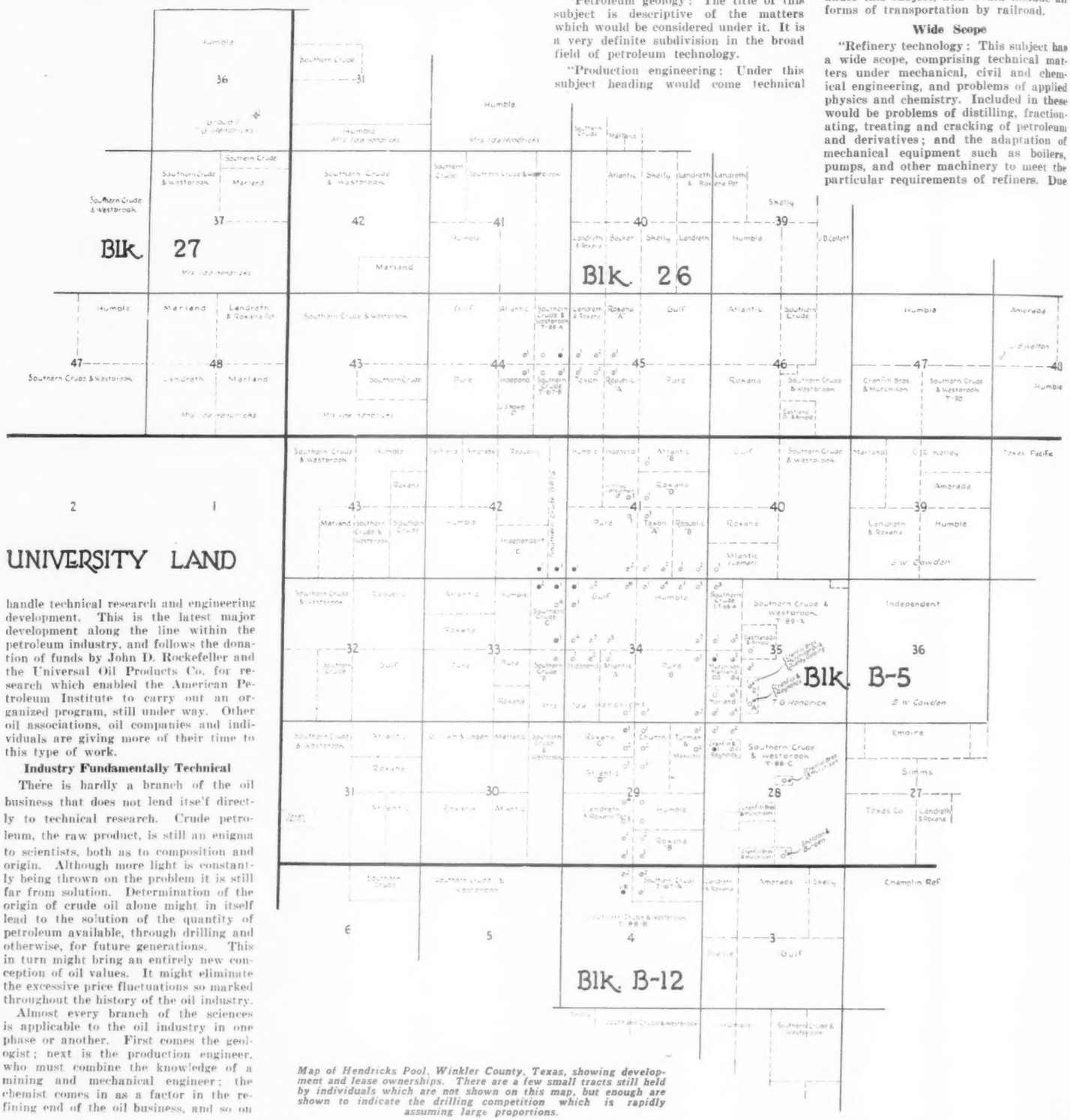
"Production engineering: Under this subject heading would come technical problems connected with drilling for oil or gas; well equipment; pumping methods; and all handling of the crude oil until it is delivered into lease tanks, or gas until it is delivered into transportation lines.

"Transportation engineering: Under this subject would come such matters as pipe line transportation of crude oil or gas; field storage of crude oil; all technical problems in connection with the handling of crude oil or gas from the time it reaches the surface until it is delivered in the case of oil to refineries, or in the case of gas to the consumer. Included under this heading would be tank car and tank steamer transportation of oil. In order to avoid duplication of consideration of such problems where products of petroleum are similarly handled, such activities would all be considered under this subject, and would include all forms of transportation by railroad.

Wide Scope

"Refinery technology: This subject has a wide scope, comprising technical matters under mechanical, civil and chemical engineering, and problems of applied physics and chemistry. Included in these would be problems of distilling, fractionating, treating and cracking of petroleum and derivatives; and the adaptation of mechanical equipment such as boilers, pumps, and other machinery to meet the particular requirements of refiners. Due

WINKER COUNTY POOL IN WEST TEXAS



Map of Hendricks Pool, Winkler County, Texas, showing development and lease ownerships. There are a few small tracts still held by individuals which are not shown on this map, but enough are shown to indicate the drilling competition which is rapidly assuming large proportions.

to the fact that the methods followed are practically the same, the recovery of gasoline by absorption and compression methods, either in refineries or in plants deriving their raw materials from oil and gas wells, would come under this subject grouping. It would also concern itself with corrosion, evaporation and storage problems, in which it would be associated with the divisions of production, transportation and distribution engineering. Under applied physics and chemistry would come the practical application of the principles of physics and chemistry to refinery problems.

"Distribution engineering: Under this subject heading may be considered technical matters and problems connected with the storage and handling of marketable petroleum products after these products have reached the zone of utilization. This would include consideration of warehouse and distributing station design and construction; storage problems; mechanical problems connected with various types of mechanical equipment used in distribution, such as tank trucks and wagons, service station pumps, and other distributing devices."

As the Standard Oil Bulletin says: "What the general public sees of the oil industry, mostly, is gasoline pumps, lubricating oil tanks, and service stations. What the public reads of the oil industry these days is, mostly, about overproduction of crude oil and conservation. Nothing is seen and little is read of one of the most important phases of the industry—the work of research and development, involving highly scientific problems of improving existing products of petroleum, of inventing new ones, of creating and perfecting new processes and methods."

Jersey Company's Recognition

The new plan of organization of the Standard Oil Co. of New Jersey, in including a subsidiary company having to do with general development, engineering and research, is a striking recognition of the more important place now occupied by technical activities in the petroleum industry. This is indicated in the large and brilliant group of men named to oversee and carry on these activities.

The new subsidiary, known as the Standard Oil Development Co., besides its officers including E. M. Clark, president, and F. A. Howard, C. H. Haupt, and C. A. Straw, vice presidents — all leading technical men—will have an executive committee of eight, including the above, with, in addition, Dr. E. W. Dean, R. T. Haslam, Dr. C. O. Johns and Roger Chew. The board of directors of the company will have 18 members, as follows: C. L. Bowman, Roger Chew, E. M. Clark, E. W. Dean, C. R. Ewing, C. A. Straw, Grant McCargo, C. C. Ramsell, T. R. Parker, C. I. Fiero, G. W. Gordon, C. E. Graff, R. T. Haslam, C. H. Haupt, F. A. Howard, C. O. Johns, H. C. Cooper, and H. C. Weiss. Besides the officers already named, there are M. H. Eames, secretary; R. P. Resor, treasurer, and P. Berau, assistant treasurer.

The Standard Oil Development Co. will be made up of the following departments or divisions:

Engineering department—C. H. Haupt, chief engineer.

Research laboratory—Dr. C. O. Johns, director.

Standard inspection laboratory — Dr. E. W. Dean, director.

Development department—R. T. Haslam, manager.

Legal department—C. A. Straw, attorney.

Executive office technical staff—Roger Chew, manager; R. H. Dickson and J. A. Britton, Jr.

Functions of Company

Among the functions of the Standard Oil Development Co. will be to consider and to carry out such work along the following lines as may be required or requested by any operating unit of the New Jersey corporation; chemical and physical research, engineering, testing, inspection and general technical work, patent and trade-mark work and litigation and the conduct of negotiations looking toward the grant of licenses under the company's patent rights. It will maintain for these purposes an engineering department, including an engineering physical and metallurgical testing laboratory, a research laboratory (which includes a special fuel testing laboratory and a lubrication laboratory) an inspection laboratory, a development department, and a legal department which will handle patent and trade-mark matters, and related legal activities. With respect to technical and patent matters, it will also act as agent, representative or adviser of the Standard Oil Co. of New Jersey and the latter's operating units in dealing with outside interests. The Standard Oil Development Co. will be a center or clearing house for the collection and dissemination of technical information and serve as headquarters staff for the technical committees of the Standard Oil Co. of New Jersey and its subsidiaries. It will continue to maintain a technical library and furnish scientific news service for the subsidiaries of the parent company.

The technical staff of the executive office will continue to investigate inventions of possible usefulness in the oil industry such as new processes, products, devices, apparatus and the like, and will determine whether any such inventions are of interest to the Standard Oil Co. of New Jersey or any of its subsidiaries.

The engineering department will continue its former line of activities, a general engineering organization for the Jersey interests. The engineering work, design, inspection, testing, etc., will however, be carried on under more active contact with the other technical branches of the company, and the benefits of the correlation and closer contact with plant conditions and tests can be better made available in service to the operating companies.

The recognition given technical research and kindred subjects by the Standard Oil Co. of New Jersey is regarded as a milestone of progress in petroleum development, and will doubtless stimulate the entire industry in efforts in the same direction.

Inter-Industry Research

There has been an enormous trend in industry in recent years toward technical and scientific perfection. This evolution had as its real basis the fact that the chemist or scientist could work better in co-operation with the economist, or business man, than alone. The history of business has been that inventions have been made by outside individuals and developed alone by them or sold to companies which could use them, in the great majority of cases. How much more logical for the scientist to work in co operation with those familiar with all other branches of a given activity, is evident. Many inventions have failed because they ignored the economic factors involved, although in principle they were practical and might have been evolved on an economic as well as scientific basis, through co-operation.

Leading business organizations are not only recognizing the value of having adequate technical staffs, but are getting together among themselves and co-operating in such activities. The development of ethyl gasoline, for instance, represents a joint scientific accomplishment of the Standard Oil Co. of New Jersey and the General Motors Corp., companies in different industries. There are many existing examples of similar co-operation among other industrial units.

The domestic oil burner is a subject on which much research has been done, but it is believed by many that this is a field worthy of the combination of the best technical authorities in all related industries. The oil burner is mentioned only as one example of the many opportunities open to the oil industry in scientific, or technical development. The industry can look to 1928 as a banner year in this growing phase of its business.

Late Fields

(Continued from Page 39)

flowed 2,090 bbls. oil plus 14 per cent water Monday compared with 1,977 bbls. oil and 15 per cent water Sunday. Magnolia Petroleum Co.'s No. 2 Hendrick treated out 390 bbls. oil Monday plus 90 per cent water. Atlantic's No. 2 Hendrick-A, Section 34, Block B-5, is now drilling at 3,000 feet and still has no showing.

PRESIDENT TEAGLE ON POTENTIAL OUTPUT

Reviewing oversupply of crude petroleum in 1927, W. C. Teagle, president of Standard Oil Co. of New Jersey, sees continued large production for 1928, with enormous potential production of West Texas and Venezuela now being held back.

Referring to reduced levels of oil prices he concludes by stating that "the prospects do not indicate any upward revision in the near future."

Though he gives actual overproduction of crude in 1927 its place of importance, Mr. Teagle attaches even greater significance to the threat of large potential production.

The year 1927 was started with an excess supply largely because of Seminole's rapid development and its contribution of 137,000,000 bbls. of light oil to the year's supply. "For the year," he says, "we have produced currently enough oil for all requirements and added to excessive reserve stocks another 63,000,000 bbls."

He says West Texas was another important new contributor to supply, with production there of 30,000 bbls. daily at the start of 1927, and currently 240,000. "Even this is relatively of little importance," he says, "compared with the threat of potential production there. On January 1 there were 10,000 bbls. per day of shut-in production; by the middle of December there were at least 500,000 bbls. per day more. This West Texas area produced 55,000,000 bbls. of oil in the past 12 months and it is estimated that it will produce three times as much in 1928."

In California, he points out, discovery and development of deep sand in Long Beach Field alone may raise production from 106,000 to 250,000 bbls. daily.

Another and important source of additional oil in 1928 is Venezuela, according to Mr. Teagle, who adds: "Production is gaining faster there than in any other country in the world and estimates for 1928 run as high as 100,000,000 bbls., or about 270,000 bbls. a day.

"The gain in consumption was 46,000,000 bbls in the last 12 months. This very considerable addition to demand was without effect on prices because of an increase of 140,000,000 bbls. in production.

"Crude prices were comparatively high in the first two months, even though 300,000 bbls. daily went into storage; the break came February 22. Not since the Cushing Field in 1914 and 1915 have crude prices remained down for so long a time as they have now and the prospects do not indicate any upward revision in the near future."

TEAPOT DOME RESERVE IS RETURNED TO NAVY

CHEYENNE, Wyo., Dec. 31. — The United States Navy regained possession of the Teapot Dome naval oil reserve in Wyoming, when Judge T. Blake Kennedy in Federal Court here ordered entered a formal decree transferring the lands leased by Albert B. Fall, when Secretary of the Interior, to Harry Sinclair, back to the navy.

The decree was entered after the court had ruled against a motion of counsel for Mr. Sinclair to have included in the decree a provision whereby the quit claims given the Government by Mr. Sinclair at the time the lease was made, would be returned to Mr. Sinclair.

The suit was originally brought by the United States through Atlee Pomerene and Owen J. Roberts, special government counsel, against the Mammoth Oil Co., Sinclair Crude Oil Purchasing Co. and the Sinclair Pipe Line Co. in the Federal District Court here. The purpose of the suit was to cancel the oil and gas lease made by the United States to the Mammoth Oil Co. April 17, 1922, and also to set aside a supplemental agreement made by the same parties February 9, 1923.

Seminole Declined 200,000 Bbls. or 40 Per Cent in 5 Months

The Seminole Field in Seminole and Pottawatomie Counties, Oklahoma, which reached a peak of 527,400 bbls. on July 30 was down to 326,428 bbls. on New Year's Day, 1928, a drop of 200,972 bbls. in five months.

Extremely cold weather on January 1 of this new year was in part responsible for the swift decline. Production for the 24 hours ending Saturday morning at 7 o'clock was 352,000 bbls., for the following day 333,000 bbls., and for the 24 hours ending Monday at 7 a. m. it had dropped to 326,000. The following day, with warmer weather, it increased to 334,000 bbls. and may go higher before it definitely drops to below 325,000 bbls.

The following tables give the peak of each pool making up the field, together with the production on New Year's Day and the amount of decline:

Seminole City	
Peak production, Feb. 22, 1927	264,500
Production January 1, 1928	52,752
Decline	211,748
Searight	
Peak production, June 15, 1927	40,621
Production January 1, 1928	19,934
Decline	20,687
Bowlegs	
Peak production, July 14, 1927	194,773
Production January 1, 1928	102,085
Decline	92,688
Earlsboro	
Peak production, August 10	209,874
Production January 1, 1928	117,069
Little River	
Peak production, October 20, 1927	47,152
Production January 1, 1928	34,648
Decline	12,504
All Seminole Pools	
Peak production, July 30, 1927	527,400
Production January 1, 1928	326,428
Decline	200,972

It will be seen that the decline in the Seminole City Pool since its peak February 22 is 211,748 bbls. or 80 per cent in a little over 11 months. The Searight Pool dropped off 51 per cent in daily production since June 15; Bowlegs has tumbled nearly 48 per cent since July 14 and Earlsboro has dropped off 44 per cent since August 10. The peak of Little River was not reached until October 20 and since that time it has fallen about 27 per cent.

The decline of the whole field since the peak day, July 30, was close to 40 per cent.

The total production of the Seminole Field up to the close of 1927 is given as 147,372,000 bbls.

MAGNOLIA PLANS LINE CORSICANA-BEAUMONT

FORT WORTH, Tex., Jan. 31.—Magnolia Petroleum Co. is going to build a 10-inch pipe line from Corsicana to Beaumont looping the three 8-inch lines which it now has between those points.

OPENS TULSA LAND OFFICE

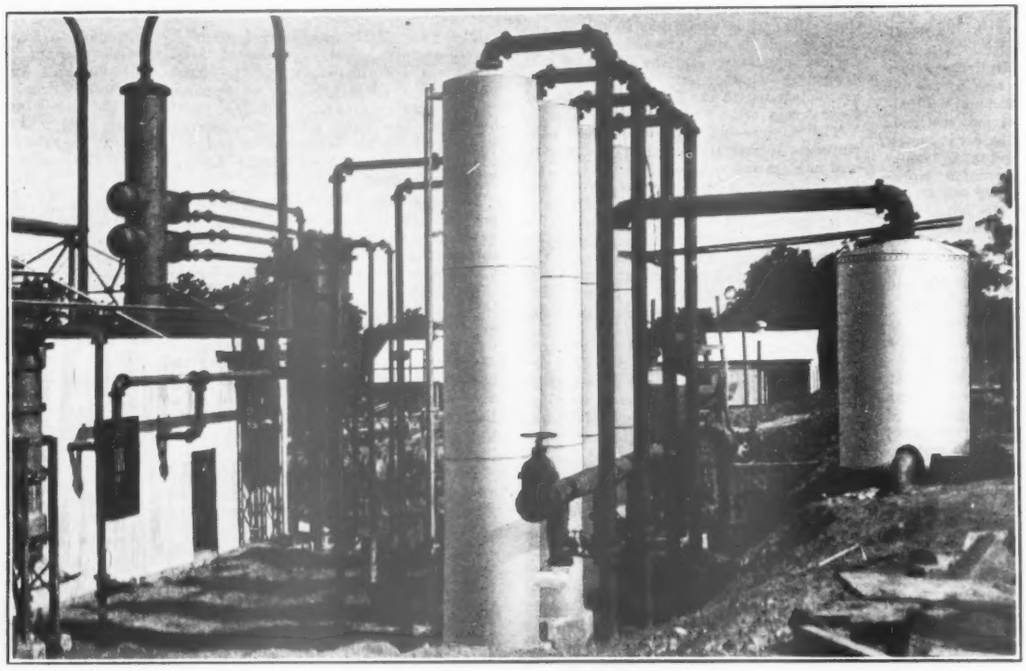
The Producers & Refiners Corp. will open a land office in Tulsa, which will be under the direction of T. A. Bryan, formerly in charge of the Rocky Mountain land department, with headquarters at Denver. It is reported that a geological force will be maintained in Tulsa.

INCOME TAXABLE

WASHINGTON, Jan. 3.—The Supreme Court refused today to reconsider its recent decision holding that incomes from oil leases on Indian tribal lands were subject to Federal taxation.

INVESTIGATE FOR YOURSELF—

Inspection of A Newton Plant Will Prove Their EFFICIENCY, ECONOMY AND SALVAGE VALUE



Newton equipment is lower in price—no royalties

All Newton equipment has 100% salvage value

The investment required and the profits possible in operating gasoline recovery equipment are large enough to justify extensive study by prospective purchasers. But you can easily and quickly get the necessary facts about the "profit process" from our representatives.

An investigation will show you that Newton equipment is 100% efficient, practically automatic in operation and extremely low in maintenance cost. You will readily understand how Newton design and construction insure this efficiency and economy. You will then know the reason why the largest refiners and natural gasoline refiners, as well as small operators, now use Newton plants in practically every district.

Write for locations of Newton plants most convenient for you to visit. Investigate for yourself.

Representatives: HURLEY BROS., Tulsa, Oklahoma

"Newton Process Is the Profit Process"

NEWTON PROCESS

MANUFACTURING COMPANY

FULLERTON, CALIFORNIA

HOLIDAY HULL STILL DOMINATES MARKET

(Continued from Page 28)

automobile registration merely indicates, in a measure, the extent to which foreign consumption may be expected to ultimately reach. At present there are but five people per motor car registered in the United States. There are 43 people per motor car in the United Kingdam, 197 in Germany, 46 in France, 294 in Italy, 138 in Spain, 1,398 in Japan and 926 in Norway. Possibly these other major countries will never reach the present standing of the United States, but with the European economic conditions more stabilized and the principle of quantity production being adopted by automobile manufacturers there, more people will be in a position to own cars. As yet however, this tendency has not caused a great increase in the number of foreign cars. On January 1, 1926, there were 24,598,248 passenger cars, buses and trucks in the world, and on January 1, 1927, there were 27,650,267, showing an increase of 2 083,058 in the United States and only 977,960 in all other countries.

Foreign refiners will also make a strong bid for this additional business. With big increases expected in the production of Venezuelan, Russian and possibly Mexican crudes, foreign refiners will be able to contract for crude to a much better advantage. Already, Venezuelan crude has shown its effect on the foreign refined oil market Production there has gradually increased until that country ranks second, having passed Mexico and Russia within the last few months. At present this production is near the 200,000-bbl. per day mark and is expected to go much higher as more intensive drilling is followed out.

In reviewing the changes in the exports of the various refined oils over the first nine months of 1927, the great increase in the amount of gas oil and fuel oil shipped and the large decrease in the kerosene exports are most noticeable. The gasoline exports remained about the same showing the competition being offered by the foreign refiners. Over this period the fuel oil shipments, including gas oil, amounted to 24,616,750 bbls. in 1926 and 31,948,571 bbls. in 1927, while the kerosene exports fell off 14 per cent.

Gasolines and Naphthas

While reports of U. S. Motor gasoline being shipped from Oklahoma refiners at prices below the 5¾ cents were openly discussed, these shipments were relatively few and were made into differential territory. There was but little of this grade moved. The principal trading was being done in the 60-62 400 and 390 endpoint grades. Export buying by the Sinclair Refining Co. helped to stabilize this market.

Natural Gasolines

There was no general change in the natural gasoline market, some grades showing a slight improvement while others weakened further. There was a little buying of the A and AA grades for export, but the slightly better position attained by these was principally due to the issuance of a request by a New Orleans purchaser to have all of the shipments originally scheduled to move over January, rushed so as to have these completed by the middle of the month instead. The C grade showed great stability and in some cases slightly higher prices were paid for this grade.

Kerosene and Distillates

Kerosene continued to be freely offered and a wide range of price quotations existed. In general there was no change in the prices at which the bulk of the material moved but concessions were reported in a number of cases. Distillates moved out in good shape. There was a great demand for the better grades of furnace oil and one refiner specializing in the manufacture of a low flash treated distillate said his orders exceeded production and has been able to increase his price despite the general weakening in other products.

Gas Oils and Fuel Oil

Both gas oil and fuel oil were very weak. There were no lower prices posted by the major companies, but there was some 16 gravity regular refinery fuel sold at 67½ cents, or 2½ cents under the low of the general market. Fuel moving into the Chicago area is meeting the strongest kind of competition and there is every possibility of fuel going to still lower levels over the next week. This is made possible by the oversupply of fuels in all of the various refining points within the Mid-Continent.

Lubricants and Wax

Lubricants moved slowly and several shipments of wax made during the week was about all that could be said of the activity in that market. Compounded oils again represented the bulk of the trading and while there was a tendency to further reduce prices, sales managers complained this business was unusually dull.

WASKOM-HOUSTON LINE IS NOW BEING TESTED

HOUSTON, Tex., Jan. 2.—The Dixie Gulf Pipe Line Co. has completed laying its gas line from the Waskom gas field of northeastern Texas to Houston and Port Arthur and now is engaged in testing out the project. The entire line is expected to be in full operation by January 10.

The line, which consists of a 22-inch line from Waskom to Livingston and two branch lines, one 18-inch line from Livingston to Port Arthur and a 16-inch line from Livingston to Houston, was started only last October and the entire distance of 279 miles has been completed in approximately three months.

The company also has completed an 8-inch branch from Longview to Jacksonville and the 26-unit booster station at Waskom is virtually ready for operation. The company later will build another booster near Livingston but this will not be necessary at present.

The Dixie Gas & Fuel Co., a subsidiary company of the Moody-Seagraves interests which are building the gas system, also has completed distribution systems at Orange, Tex., which will get its supply from the Port Arthur branch, and has started work of laying lines in Henderson and Rusk.

H. J. HOPKINS DIES

Harvey John Hopkins, aged 79 years, pioneer oil worker, died in Buffalo last week. Mr. Hopkins drilled in Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Kansas, Oklahoma and Texas. In Texas he was associated with S. M. Scott and Senator Charles A. Towne

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 38)

Osage Oil Corp.'s No. 1 H. M. Halff ..... Top pay 1,051 ft.; total depth 1,052 ft.; flowed 150 bbls. oil in 8 m'n. and shut in.

Bob Penn's No. 1 L. P. Powell ..... Hole full salt water 2,765 ft.; shut down.

William Shaffer et al's No. 1 University, C SE SE Sec. 9 Blk. 47, University Sur., elev. 2,344 ft. ..... Top pay 2,138 ft.; total depth 2,368 ft.; shot with 220 qts. 2,133-73 ft.; cleaning out 5 bbls. daily before shot.

William Schaffer et al's No. 2 University, 1,350 ft. N and 2,610 ft. E of SW cor. Sec. 9, Blk 47, University Land ..... Top salt 1,060 ft.; first oil show 2,190-96 ft.; second 2,225-29 ft.; 1 baller oil in 10 hrs. at 2,590 ft.; shut down 2,635 ft., brown lime.

Simmons Oil Co. et al's No. 1 H. M. Halff, NW cor. Sec. 69, Blk. 1, I. & G. N. ..... Top salt 445 ft.; show oil 610 ft.; 500,000 ft. gas 854 ft.; drlg. 945 ft.

W. W. Donnelly & Young's No. 1 Massey, Sec. 29, Blk. U-V ..... Shut down 520 ft.

World Oil Co.'s No. 1 Schneeman-B, Sec. 60, Blk. BB, G. C. & S. F. Sur. ..... Top salt 1,070 ft.; hole full salt water 2,210-15 ft.; fish. tools 2,350 ft.

Young & Donnellys' No. 1 J. M. Shannon, C Sec. 11, Blk. 9, D. & S. E. Sur. ..... 7,000,000 ft. gas at 1,662 ft.; shut down 1,676 ft.

CULBERSON COUNTY

Deep Rock Oil Co.'s No. 2 Kloh-Rumsey, Sec. 21, Blk 29, T. & P. Sur., T-1 (NE of No. 1) ..... Shut down 1,165 ft.

James H. Gardner et al's No. 1 Radford, C SE Sec. 29, Blk. 62, Public School Land Sur. ..... Shut down 700 ft.

Scott & Dittman's No. 1 Miller, SW cor. NW NE Sec. 1, School Blk, 97 ..... Drlg. 310 ft.

ECTOR COUNTY

The Texas Company and Cosden's No. 1 W. E. Connell, SE cor. Sec. 24, Blk. B-16, School Land ..... Top salt 925 ft.; small show oil 3,624 ft.; drlg. lime 3,850 ft.

EL PASO COUNTY

Ellsworth & Haunt's No. 1 McKinney & Jones ..... Moving in material.

FISHER COUNTY

Cranfill & Reynold's No. 1 J. A. Young, Sec. 208, B. B. B. & C. Sur. ..... Hole full salt water 2,400-35 ft.; drlg. 2,730 ft.

Ideal Oil Co.'s No. 1 Jameson, C SE Sec. 111, Blk. 1, H. & T. C. Sur. ..... Hole full salt water 2,345-2,520 ft.; shut down 3,431 ft.

Marland Oil Co. and Texon's No. 1 McCall, Sec. 108, Blk. 3, H. & T. C. Sur. ..... Rig.

Marland Oil Co. and Vacuum Oil Co.'s No. 1 J. H. R. Lagow ..... Hole full salt water 3,530 ft.; shut down.

R. W. Raney's No. 2 Maberry, Sec. 56, Blk. 1, T. & P. Sur. ..... Shut down for orders 2,743 ft.

The Texas Company's No. 1 D. S. Stevens, C SW SE SE Sec. 79, Blk. 1, H. & T. C. Sur. ..... Hole full water 2,570-2,615 ft.; drlg. 3,175 ft.

FOARD COUNTY

Clark et al's No. 1 Atkins ..... Lime 1,580-1,930 ft.; show gas 1,885 ft.; drlg. 2,430 ft.

The Texas Company's No. 1 Watkins ..... Drlg. 3,575 ft.

GAINES COUNTY

Westheimer & Dauhe's No. 1 Birge & Forbes Land Co., Sec. 308, Terrell County School Land ..... Cem. 8-in. 3,900 ft.; shut down approx. 5,000 ft.

GARZA COUNTY

Emerald Oil Co.'s No. 1 D. Boren, NW cor. NE Sec. 137, Blk. 5, H. & G. N. Sur. ..... Small show oil in gray lime 1,884-1,902 ft.; shut down 2,600 ft.; show oil and hole full water 2,420-60 ft.

Gulf Prod. Co.'s No. 1 E. P. Swenson-A, Sec. 67, Blk.3, H. & G. N. Sur. ..... Top salt 495 ft.; top lime 2,075 ft.; drlg. gray lime 2,460 ft.

GLASSCOCK COUNTY

Texon & Marland's No. 1 Settles ..... Set 10-in. 1,420 ft.; top lime 2,015 ft.; drlg. 2,100 ft.

HOWARD COUNTY

California Co.'s No. 1 Fisher Bros., SE SW NW Sec. 36, Blk. 33, T. & P. Sur., T-1-S ..... Shows oil 1,530-48 ft. and 1,562-64 ft.; hole full water 2,020-34 ft.; hole full salt water 2,750-75 ft.; top lime 3,065 ft.; total depth 3,785 ft.; landed 6-in.

Coyle-Concord Oil Co.'s No. 1 Dora Roberts ..... Shot 40 qts. 1,705-15 ft. and 1,860-90 ft.; made 52 bbls. in 13 hrs.

Coyle-Concord Oil Co.'s No. 2 Dora Roberts ..... Shot with 40 qts. 1,850-70 ft.; 1,500 ft. oil in hole; cleaning out.

Coyle-Concord Oil Co.'s No. 3 Dora Roberts, Sec. 156, Blk. 29 ..... Drlg. 1,020 ft.

Dixie Oil Co.'s No. 1 H. R. Clay ..... Shut down 3,325 ft.; show oil 3,320 ft.

Henshaw et al's No. 1 W. R. Settles, SW SE SW Sec. 135, Blk. 29 ..... Hole full sulphur water 1,325-30 ft.; shut down 1,900 ft.

Lockhart & Co.'s No. 1 Dora Roberts, Sec. 157, Blk. 29 .. Drlg. 1,200 ft.

Marland Oil Co.'s No. 1 Clay-E, NW NE SE Sec. 138, Blk. 29 ..... Pay 2,480-2,500 ft.; swabbed approx. 160 bbls.; hole full salt water 3,360-70 ft.; total depth 3,562 ft.; set 5-in. with packer to shut water off.

Marland Oil Co.'s No. 1 Richardson, C NW Sec. 12, Blk. 32, T. & P. Sur., T-1-S ..... Top salt 870 ft.; hole full salt water 2,235-2,300 ft.; drlg. 2,300 ft.

Marland Oil Co. and Zoch's No. 1 Jones, Sec. 32, Blk. 27, T. & P. Sur., elev. 2,218 ft. ..... Top lime 2,250 ft.; drlg. 2,430 ft.

Mays, Nixon & Flowers' No. 1 W. J. Flowers ..... Little salt at 976-97 ft.; top salt 1,114 ft.; drlg. 1,400 ft.

Miley and Marland Oil Co.'s No. 1 C. D. Read, C NW Sec. 12, Blk. 31, T. & P. Sur. T-1-N ..... Spudded and shut down 5 ft.

Owens & Sloan's No. 2 Dora Roberts, SW cor. SE Sec. 136, Blk. 29 ..... Swabbed 200 bbls. in 3 hrs. at 2,560-92 ft., leaving 800 ft. oil in hole.

Peer Oil Corp's No. 1 Read, C NW Sec. 39, Blk. 30, T. & P. Sur., T-1-N. ..... Hole full salt water 2,790-2,820 ft.; total depth 3,215 ft.; underreaming 6-in.

Schermerhorn Oil Co.'s No. 1 Dora Roberts ..... Drlg. 1,988 ft.

Schermerhorn Oil Co.'s No. 1-A Dora Roberts, SW cor NE ..... Drlg. 650 ft.

Sun Oil Co.'s No. 1 W. R. Settles, Sec. 135, Blk. 29. ..... Drlg. 100 ft.

Texon O. & L. Co. and Marland Oil Co.'s No. 1 Mrs. Connaly, NE cor. Sec. 15, Blk. 33, T. & P. Sur., T-1-N ..... Top salt 1,425 ft.; hole full salt water 1,760-1,800 ft.; show oil 3,065 ft.; hole full sulphur water 3,500-55 ft.; hole full water 3,925-50 ft.; total depth 4,074 ft.; reaming 6-in. at 4,065 ft.

Texon O. & L. Co. and Marland Oil Co.'s No. 2 W. R. Settles-A ..... Shut down for storage; sand at 1,280-84 ft.

Ward Oil Co.'s No. 1 Dora Roberts ..... Cem. 8¼-in. pipe at 1,675 ft.; rigging up machine.

Weekly Oil Corp. et al's No. 1 Dora Roberts, Sec. 156, Blk. 29 ..... Drlg. 60 ft.; spudded Dec. 27.

HUDSPETH COUNTY

American Land Co.'s (was Lockhart Bros.') No. 1 Gardner & Moseley, C SE Sec. 5, School Blk. 21 ..... Shut down 1,000 ft.

Western States Oil Co.'s (was Lockhart & Co.'s) No. 1 Moore, C SE Sec. 16, Blk. 71, T. & P. Sur., T-6 ..... Shut down for casing 900 ft.

Western States Oil Co.'s No. 1 Gardner & Mosley, Sec. 12, Blk. 18 ..... Spudding.

IRION COUNTY

F. E. Webb et al's No. 1 J. M. Nutt ..... Spudded and shut down 125 ft.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. 2 Means ..... Shut down 2,400 ft.; baller hung.

Humble O. & R. Co.'s No. 2 Crecencio Flores, 1,130 ft. N and 850 ft. E of SW cor. Sec. 34, Blk. 58, T. & P. Sur., Twp. 8 ..... Drlg. 3,120 ft. white lime; hole full water.

JONES COUNTY

Midwest Expl. Co.'s (was Campbell et al's) No. 1 L. H. Herndon, Sec. 6, M. E. P. & P. Sur., elev. 1,832 ft. ... Total depth 3,009 ft.; will shoot showings at 2,485-89 ft. and 2,558-61 ft.

Garland & Diamond's No. 1 E. D. Glynn, SE cor. Sec. 18, Deaf & Dumb Asylum Lands ..... Shut down 2,430 ft.

Hutson & Weaver's No. 1-A Smith ..... Drlg. 2,060 ft.
W. G. Stough et al's No. 1 W. C. Bennett, Sec. 42, Orphan Asylum Sur. ..... Clean. out 800 ft.
W. G. Stough and others' No. 1 J. P. Willis, J. C. Patterson Sur. No. 2 ..... Shut down 1,740 ft.
Swensondale Oil Co.'s No. 1 Caton, SW NW Sec. 9, Deaf & Dumb Asylum Lands ..... Show oil 3,008-20 ft.; shot 80 qts., no results; drlg. 3,320 ft.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Moore ..... Shut down 900 ft.
Deep Rock Oil Co.'s No. 1 Big Four, 1,270 ft. S and 2,590 ft. W of NE cor. Sec. 31, Blk. 4 ..... Run. 6-in. 3,050 ft.

LOVING COUNTY

Delaware Oil Co.'s No. 1 Lockhart & Ramsey ..... Location.
Lockhart Bros.' No. 1 fee, Sec. 85, Blk. 33, H. & T. C. Sur. ..... Spudded 40 ft. and shut down.
Owens & Sloan's No. 1 W. D. Johnson, C SE Sec. 20, Blk. 53, T-2, T. & P. Sur., elev. 2,934 ft. ..... Shut down 1,020 ft.; in litigation.

LYNN COUNTY

Elpo Oil Co.'s No. 1 Nevols, NW cor. Sec. 6, Blk. C-42 School Lands ..... Shut down 630 ft.
Hart Oil Corp.'s No. 1 C. O. Edwards A-1 ..... Rig. up.

MENARD COUNTY

Carpenter & Robbins' No. 1 Kothman ..... 165 ft. 34.6 grav. oil at 414-15 ft.; shut in.
May & Clark's No. 1 Callan Ranch ..... Drlg. 300 ft.
Renfro et al's No. 1 J. Davis ..... Drlg. 185 ft.

MIDLAND COUNTY

Orbit Oil Co.'s No. 1 Moreland, C SE Sec. 17, Blk. 39, T. & P. Sur., T-1-S ..... Shut down 185 ft.
Shoup et al's No. 1 Roy Parks ..... Location.

MITCHELL COUNTY

Paul Teas et al's No. 1 A. C. Mills, NW cor. C. A. O'Keefe Sub. 11, J. P. Smith Sur. ..... Shut down 670 ft.
Robert Thraves' No. 1 C. Way, Sec. 91, Blk. 27, T. & P. Sur., T-1-N ..... Total depth 2,508 ft.; shut down.

NOLAN COUNTY

Herbert Oil Co.'s (was McClesky and others') No. 1 Pepper, SE cor. SW Sec. 29, Blk. 22, T. & P. Sur. ... Rigged up and shut down.
Winemiller Corp.'s (was Reiter-Foster Oil Co.'s No. 1 T. E. Arledge, Sec. 217, Blk. 1, H. & T. C. Sur. ..... Drlg. 2,310 ft., lime and gyp.
Zweifel et al's No. 1 Longbotham, C SE Sec. 130, Blk. 1, H. & G. N. Sur. ..... Shut down 3,845 ft.

PECOS COUNTY

George Anderson's No. 1 Sherbine Bros. ..... Drlg. 600 ft.
Buell & Hagan's No. 1 Pryor & Wilson ..... Location.
Cummings et al's No. 1 Blackstone & Slaughter ..... Shut down 2,528 ft., contract depth.
Diamond Pet. Co.'s No. 1 Blackstone & Slaughter ..... Location.
M. C. Dibble & Hale's No. 1 Bonel rake, Sec. 115, Blk. 8, H. & G. W. Sur., elev. 2,555 ft. ..... Shut down 640 ft.
Everett et al's No. 1 J. Fields ..... Spudded and shut down.
Gibson Oil Corp.'s No. 1 R. R. Russell ..... Fishing 225 ft.
George A. Henshaw et al's No. 1 B. T. Corder, C SW Sec. 74, Blk. 2, C. C. S. D. Sur. ..... Shut down for underreamer 960 ft.
George A. Henshaw, Jr., No. 1 Schimmel, Sec. 29, Blk. 144, T. & St. L. Sur., elev. 2,780 ft. ..... Hole full sulphur water 1,275-80 ft.; shut down for orders 2,506 ft.
Kershaw & Livingston's No. 1 Cannon ..... Rig on ground.
Kirby Pet. Co. and Roxana's No. 1 W. W. Turney, NW cor. SW Sec. 11, Blk. 140, T. & St. L. Sur. ..... Hole full sulphur water 975-83 ft.; shut down 1,189 ft.
Mid-Kansas O. & G. Co.'s No. 1 Pryor & Wilson, NW cor. Sec. 3, Blk. 5, T. C. R. R. Sur. ..... Rigged up and shut down.
Moody Oil Corp.'s No. 1 B. T. Corder, C SW Sec. 77, Blk. 2, C. C. S. D. Sur. ..... Shut down 1,090 ft.
Olean Pet. Co.'s No. 1 G. N. Harral, C SW Sec. 82, Blk. R-3, G. C. & S. F. Sur., elev. 3,005 ft. ..... 1,200 ft.; salt water 2,965-78 ft.; set 8-in. 2,977 ft.; shut down 3,042 ft.
Quinby Oil Co.'s No. 1 Townsite, Sec. 1, Blk. 267, Client Addn. Sur. Fort Stockton, elev. 2,980 ft. ..... Shut down 3,440 ft.
Quinby Oil Co.'s No. 2 Bennet, C NW 592, Blk. 105, G. C. & S. F. Sur., elev. 2,560 ft. ..... Cleaning out 1,465 ft.
Quinby Oil Co.'s No. 1 A. A. Gray, 660 ft. N and 1,320 ft. E SW cor. Sec. 593, Abst. 3,009, elev. 2,551 ft. ..... Shut down 700 ft. to deepen.
Red Bank Oil Co.'s and Kirby Pet. Co.'s No. 1 Arthur Harral ..... Drlg. anhydrite 2,560 ft.
Robert Lee's No. 1 Joe Parker ..... Rigging up.
B. J. Spikes' No. 1 George Brown ..... Spudded and shut down 140 ft.
Transcontinental Oil Co.'s No. 1 Blackstone & Slaughter, Sec. 29, Blk. 129, St. L. Sur., elev. 3,539 ft. ..... 250 ft. sulphur water in black sand 1,150-80 ft.; small show oil 1,510 ft.; show gas 1,540 ft.; show oil 2,080 ft.; brown sand 3,560-70 ft.; 250,000 ft. gas at 3,565 ft.; drlg. 3,870 ft.
World Oil Co.'s No. 1 Kloh, Sec. 47, Blk. 45, Twp. 8, T. P. R. R. Sur., elev. 2,810 ft. ..... Rigging up.
World Oil Co.'s No. 1 Serf, CNE Sec. 10, Blk. 130, T. & St. L., elev. 3,435 ft. ..... Ready to start up again at 260 ft.

Yates Pool, Pecos County

Allsman & Bell's No. 5 River Bed, 312 ft. N of No. 4 ..... Drlg. 670 ft.
Allsman & Bell's No. 8 River Bed ..... Drlg. 205 ft.
Allsman & Bell's No. 11 River Bed ..... Shut down 915 ft.
California Co.'s No. 2 Yates, Sec. 34, Blk. 194 ..... Rig.
California Co.'s No. 9 Yates, Sec. 34, Blk. 194 ..... Rigging up.
California Co.'s No. 10 Yates, Sec. 34 ..... Rig.
California Co.'s No. 1 Smith, Lease 1 ..... Drlg. 105 ft.
California Co.'s No. 5 Smith, Lease 3, Sec. 35 ..... Show oil 1,448-50 ft.; top pay 1,500 ft.; drlg. 1,608 ft.; flowing 932 bbls. in 11 hrs.
California Co.'s No. 6 Smith, Lease 3, Sec. 35 ..... Drlg. 1,100 ft.
California Co.'s No. 7 Smith, Lease 3, Sec. 35 ..... Drlg. 1,142 ft.; 3,000,000 ft. gas 1,135-42 ft.
California Co.'s No. 8 Smith, Lease 3 ..... Drlg. 950 ft.
California Co.'s No. 9 Smith, Lease 3 ..... Drlg. 110 ft.
California Co.'s No. 10 Smith, Lease 3 ..... Rig.
•Day Bros. & McKnight's No. 1 Yates, NW cor. Sec. 58, Blk. 1 ..... Top salt 440 ft.; shut down 900 ft.
Douglas Oil Co.'s No. 2 J. T. Sellman ..... Drlg. 420 ft.
Gulf Prod. Co.'s No. 3 Smith-A, Sec. 28, Blk. 194 ..... Slight show oil and gas 1,417 ft.; flowing by heads 119 bbls. in 19 hrs. at 1,558 ft.
Gulf Prod. Co.'s No. 4 Smith-A ..... Drlg. hard lime 1,382 ft.; top pay 1,280 ft.; 224 bbls. in 10 hrs.
Gulf Prod. Co.'s No. 5 Smith-A ..... Drlg. 830 ft.
Gulf Prod. Co.'s No. 6 Smith-A ..... Drlg. 100 ft.
Gulf Prod. Co.'s No. 7 Smith-A ..... Rigging up.
•Gulf Prod. Co.'s No. 4 Yates, Runnels Co. School Land .. Drlg. anhydrite 1,208 ft.
Gulf Prod. Co.'s No. 5 Yates ..... Drlg. 1,117 ft.
Gulf Prod. Co.'s No. 6 Yates ..... Set 12-in. 455 ft.
Gulf Prod. Co.'s No. 7 Yates ..... Underreaming 8-in. 765 ft.
Humble O. & R. Co.'s No. 6 Smith-A ..... Drlg. 105 ft.
Humble Oil Co.'s No. 3 M. A. Smith-B, Sec. 101, Blk. 194 ..... Top pay 1,316 ft.; flowing 20 bbls. hr. 1,380 ft.
Humble Oil Co.'s No. 4 M. A. Smith-B ..... Rig on ground.
McMan O. & G. Co.'s No. 1 J. H. Tippett, Sec. 108, Blk. 194 ..... Hole full water 240-60 ft.; set 6-in. 1,262 ft.
•Mazda and Savoy's No. 2 Smith, Sec. 24, Blk. 194 ..... Location.
McMan & Marland's No. 13 Yates ..... Top lime 1,271 ft.; show oil 1,315 ft.; drlg. 1,325 ft.
McMan & Marland's No. 14 Yates ..... Drlg. 1,311 ft.
McMan and Marland's No. 15 Yates ..... Drlg. 725 ft.
McMan and Marland's No. 16 Yates ..... Rig.
Marland Oil Co.'s No. 10 Yates-A ..... Flowed 300 bbls. hr. 973-1,014 ft.; shut down.
Mid-Kansas and Transcontinental's No. 10 Yates-A, Sec. 33½, Blk. 194 (N of No. 1) ..... Drlg. 530 ft.
•Mid-Kansas and Transcontinental's No. 11 Yates-A, Sec. 33½, Blk. 194 (S of No. 1) ..... Drlg. 850 ft.
Mid-Kansas and Transcontinental's No. 12 Yates-A ..... Drlg. 165 ft.
Mid-Kansas and Transcontinental's No. 13 Yates-A ..... Drlg. 150 ft.
Mid-Kansas and Transcontinental's No. 14 Yates-A ..... Wait on machine.
Mid-Kansas and Transcontinental's No. 15 Yates-A ..... Wait. on machine.
Mid-Kansas and Transcontinental's No. 10 Yates-B, Sec. 61, Blk. 1 ..... Location.
Mid-Kansas and Transcontinental's No. 11 Yates-B ..... Cellar.
•Mid-Kansas and Transcontinental's No. 12 Yates-B ..... Cellar.
Mid-Kansas and Transcontinental's No. 13 Yates-B ..... Topped pay 975 ft.; drlg. 1,024 ft.; flowed 155 bbls.
Mid-Kansas and Transcontinental's No. 14 Yates-B ..... Top pay 926 ft.; drlg. 1,017 ft.; flowed 677 bbls.
Mid-Kansas and Transcontinental's No. 17 Yates-B ..... Drlg. 310 ft.
Mid-Kansas and Transcontinental's No. 18 Yates-B ..... Drlg. 950 ft.
Mid-Kansas and Transcontinental's No. 19 Yates-B ..... Drlg. 540 ft.
Mid-Kansas and Transcontinental's No. 20 Yates-B ..... Drlg. 680 ft.
Mid-Kansas and Transcontinental's No. 21 Yates-B ..... Drlg. 320 ft.
Mid-Kansas and Transcontinental's No. 22 Yates-B ..... Cellar.
Mid-Kansas and Transcontinental's No. 23 Yates-B ..... Drlg. 300 ft.
Mid-Kansas and Transcontinental's No. 4 Yates-C, Sec. 60, Blk. 1 ..... Show oil 660-65 ft.; top pay 1,095 ft.; shut in at 1,140 ft.
Mid-Kansas and Transcontinental's No. 6 Yates-C ..... Wait. on machine.
Mid-Kansas and Transcontinental's No. 10 Yates-C ..... Location.
Mid-Kansas and Transcontinental's No. 2 M. A. Smith ... Set 8-in. 905 ft.
Mid-Kansas and Transcontinental's No. 2 Yates-D, SW part Sec. 62, Blk 1 ..... Set 6-in. 1,017 ft.
Mid-Kansas and Transcontinental's No. 7 Smith-Taylor.. Build. road.
Mid-Kansas and Transcontinental's No. 8 Smith-Taylor.. Drlg. 205 ft.
Mid-Kansas and Transcontinental's No. 9 Smith-Taylor.. Wait. on machine.
Oregon Oil Corp.'s No. 1 Yates ..... Build. road.
Roxana Pet. Corp.'s No. 5 J. H. Tippett, Sec. 102, Blk. 194 ..... Set 6-in. 1,192 ft.
Roxana Pet. Corp.'s No. 6 J. H. Tippett, Sec. 102, Blk. 194 ..... Underreaming 10-in. 425 ft.
Roxana Pet. Corp.'s No. 7 J. H. Tippett ..... Set 6-in. 1,071 ft.
Roxana Pet. Corp.'s No. 3 Smith, SE cor. SW Sec. 27, Blk 194 ..... Drlg. 1,235 ft.
Roxana Pet. Corp.'s No. 4 Smith ..... Set. 6-in. 1,451 ft.
Roxana Pet. Corp.'s No. 5 M. A. Smith, Sec. 27, Blk. 194.. Fish. for tools 650 ft.
Simms Oil Co.'s No. 4 Smith, Sec. 103, Blk. 194 ..... Clean. out 445 ft.
Simms Oil Co.'s No. 5 Smith ..... Drlg. 520 ft.
Simms Oil Co.'s No. 6 Smith ..... Drlg. 800 ft.

PRESIDIO COUNTY

Headlock & Miller's No. 1 Tootle Est., Sec. 123, Blk. 3, D. & P. Sur., elev. 2,912 ft. ..... Salt water 2,610 ft.; total depth 3,003 ft.; shut down for orders.
Pinto Canyon Oil Co.'s No. 1 Fields, 1,760 ft. S and E NW cor. Sec. 74, Blk 2, D. & P. Sur. ..... Location.

REAGAN COUNTY

Henshaw & Camp's No. 1 University, Sec. 14, Blk. 49, University Land, elev. 2,772 ft. ..... 250 ft. sulphur water at 800 ft., setting 8-in. 2,182 ft.
Skelly Oil Co.'s No. 1 University, SW cor. Sec. 33, Blk. 8, University Land ..... Top salt 1,340 ft.; fishing 2,795 ft.
Texon O. & L. Co.'s No. 1-B University, Group 1 ..... Top pay 6,284 ft.; total depth 6,590 ft.; 3,800 ft. of 38.7 grav. oil in hole; clean. out.
White et al's No. 1 Shofner & Sterling, SE cor. NW Sec. 10, 2 m. N of Big Lake ..... Shut down 905 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ..... Show oil 1,105-10 ft.; shut down 2,200 ft.
Grisham-Hunter Corp.'s No. 1 Rathge & Connor, 600 ft. from N line and 5,760 ft. from W line of Sec. 26, Blk. 2, H. & G. N. ..... Spudded Dec. 26.
David R. Thompson's No. 1 A. A. Eddins ..... Fish. bit 4,170 ft.; shut down.
World Oil Co.'s No. 1 Biggs, C SE Sec. 85, Blk. 112, Public School Land Sur., elev. 3,068 ft. ..... Shut down 1,657 ft.
World Oil Co.'s No. 1 Duff, 1,500 ft. from S and 850 ft. from NE lines R. S. Johnson Sur. No. 68, elev. 2,774 ft. ..... Top Delaware lime 4,185 ft.; hole full brackish salt water 4,368-4,500 ft.; plug. back to 4,250 ft. to shoot 70 qts. at 4,185-4,223 ft.

RUNNELS COUNTY

Empire G. & F. Co.'s No. 1 C. C. Clay ..... Hole full salt water 2,250-57 ft.; drlg. 2,265 ft.
Gibson & Johnson's No. 1 Harris Est., Juliana Voske Cabrera Sur. ..... Location.
Gibson & Johnson's No. 1 H. P. Serratt, C SE NW Sec. 150, E. T. R. R. Sur. ..... Rig. up.
Kennedy et al's No. 1 J. E. Tally ..... Shut down 1,720 ft.
May et al's No. 1 J. M. Schneider, John Wall Sur. ..... One-half bailer salt water 1,031 ft.; shut down 1,056 ft.
Miles Oil Co.'s No. 1 Charles Ray, Sec. 21, T. & N. O. Sur. ..... Cellar and machine.
Miles Oil Co.'s No. 1 L. S. Lawhon, NE cor. Sec. 68 ..... Show gas 960-80 ft.; shut down for 6-in. 2,310 ft.
Noble O. & G. Co.'s No. 1 Sims, Sec. 12, J. J. McHenry Sur. ..... Hole full sulphur water 2,710-20 ft. and hole full salt water 2,820 ft.; shut down 3,506 ft.
Royal Pet. Co.'s No. 1 A. C. Willingham ..... Rigging up.
Sillix Pet. Co.'s No. 1 Malone ..... Location.
Swensondale Oil Co.'s No. 1 E. A. Werner ..... Drlg. 1,905 ft.
Owenwood Oil Corp.'s No. 1 H. B. Fowler ..... Location.
Watchorn O. & G. Co.'s No. 1 J. L. King ..... Hole full salt water 1,683-91 ft.; drlg. 1,706 ft.

SCHLEICHER COUNTY

Beavers & Leath et al's No. 1 J. A. and W. T. Whitten, C NW Sec. 35, Blk. 11, T. O. Sur. ..... Shut down 400 ft.
Thomas Grey et al's No. 1 Ball Robinson, C NW Sec. 25, Blk. M. G. H. & S. A. Sur. ..... Sulphur water 2,125 ft.; hole full water 2,160-80 ft. and 2,935 ft.; total depth 3,090 ft.; cleaning out.

SCURRY COUNTY

J. B. Mims et al's No. 1 J. J. Koonsman, Sec. 220, Blk. 2, H. & T. C. Sur. ..... Rig.

STERLING COUNTY

Orr et al's No. 1 Neal Reed, CNL Sec. 15, Blk. 30, W. & N. W. Sur. ..... Shut down 1,390 ft. (cor.).

STONEWALL COUNTY

Peer Oil Corp. and Producers Oil Co.'s (was J. P. Johnson's) No. 1 R. P. Morrow ..... Hole full water 2,625-90 ft.; set 10-in. 2,700 ft.; shut down orders 3,038 ft.

TAYLOR COUNTY

A. J. Brown et al's No. 1 Henslee, NE cor. Sec. 5, Blk. 4, S. P. R. R. Sur. ..... Drlg. 2,310 ft.
Dorning & Perrine's No. 1 J. A. Hammer, C N 100 acres, Sec. 23, Blk. 19, T. & P. Sur., elev. 1,904 ft. .... Shut down 455 ft.
Gilbert Johnson and Day Bros.' No. 1 C. M. Brown, Sec. 1, Blk. 6, T. & P. Sur. ..... Shut down 835 ft.
Owen & Sloan's No. 1 Lattimer, Sec. 14, Blk. 9, T. & P. Sur. ..... Run 5-in. and cleaning out 2,687 ft.
Roeser & Pendleton's No. 1 Sam Hutman, C W half NW Sec. 64, Blk. 5, T. & P. Sur. ..... Water sand 2,222 ft.; total depth 2,980 ft.; run. 5-in.

TERRELL COUNTY

Deep Rock Oil Co.'s No. 1 H. C. Nolke, Sec. 4, Blk. A-2, T. C. R. R. Sur. ..... Rig.
Humble Oil Co.'s No. 1 University, Sec. 15, Blk. 34 ..... Spudded 75 ft. Dec. 27.
Milham Exploration Co.'s No. 1 Bassett, Sec. 77, Blk. Y, W. H. Robertson Sur. ..... Shut down 1,260 ft.

TERRY COUNTY

Kingsland O. & P. Co.'s No. 1 Brownsfield, C NW SW SW Sec. 7, Blk. 1-A, E. L. & R. R. Sur. ..... Slight show gas 2,230 ft.; run. 6-in. 3,207 ft.

TOM GREEN COUNTY

George Amery's No. 1 Wilkey, C SW Sec. 3, B. A. L. Sur. ..... Location.
Cox et al's No. 1 Llano ..... Total depth 476 ft.; shut down.
Fitzgerald et al's No. 1 Bennett ..... Shut down 1,885 ft.
Marland Oil Co.'s No. 1 J. W. Johnson, C SE. Sec. 6, R. B. Sanderson Sur. ..... Hole full water 2,020-45 ft.; fished out line 2,830 ft.; drlg. up bailer 2,840 ft.
Marland Oil Co.'s No. 1 J. W. Johnson-A ..... Fished out tools 2,150 ft.; drlg. 2,235 ft.; hole full sulphur water.

Tulsa Oil Co.'s No. 1 Adams, C SW Sec. 163, Blk. 11, S. P. R. R. Sur. — Shut down lime 1,020 ft.
Haulbert et al's No. 1 Johnson — Drlg. 840 ft.
Collins et al's No. 1 Jones — Location.

UPTON COUNTY

Mark Curtis et al's (was Hultz et al's) No. 2 Giddings, 5,336 ft. S and 6,678 ft. E of NW cor. Throckmorton Co. School Land, League 1, elev. 2,757 ft. — Drlg. 700 feet.
Southern C. O. P. Co.'s No. 1 C. W. Hobbs — Flowed sulphur water 2,340-80 ft.; drlg. 2,690 ft.
The Texas Company and Cordova Union's No. 1 Union Land, Sec. 23, Blk. 35, H. & T. C. — Top pay 2,098 ft.; swabbed 60 bbls. in 36 hrs. at 2,271 ft., 2 per cent water; drlg. 2,420 ft.; 1,800 ft. water in hole.
Texas Pacific C. & O. Co.'s No. 11 J. F. Lane-A lease, Sec. 5 — Swabbed 104 bbls. first 24 hrs. at 1,910-2,067 ft.; will deepen.
Tulsa Drlg. Co.'s No. 1 W. A. Chaney, Sec. 18, Blk. 3, M. K. T. Sur. — Top salt 670 ft.; show oil 2,090 ft.; total depth 2,435 ft.; plugging back to oil show.
Wise & Jackson's No. 1 J. H. Porter, SW cor. SW SW Sec. 184, Blk E, elev. 2,592 ft. — Top pay 3,419 ft.; total depth 3,517 ft., gray lime; shut down.

VAL VERDE COUNTY

A. Blume et al's No. 1 Moore Est., Sec. 183, J. Mitchell Sur., elev. 953 ft. — Shut down 3,000 ft.
Curso Williams' No. 1 Holman, NE NE Sec. 5, Blk. N, G. H. & S. A. Sur. — Shut down 2,940 ft.
East Del Rio Oil Co.'s No. 1 Russell, SE cor. Sec. 183, Del Rio Town Sur., elev. 941 ft. — Total depth 3,190 ft.; shut down.
Magnolia Pet. Co.'s No. 1 Whitehead, Sec. 81, D. G. C. & S. F. Sur., elev. 1,770 ft. — Drlg. 5,450 ft.
Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I. & G. N. Sur., elev. 1,175 ft. — Shut down 3,900 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I. & G. N. Sur, elev. 2,130 ft. — Gas sand 2,491-2,520 ft.; tested 125,750 ft.; gas; reset 8-in. 2,511 ft.; drlg. 3,820 ft.
W. B. Thraves et al's No. 1 W. E. Wilson — Spudding.

WARD COUNTY

Selby Oil Co. et al's No. 1 A. G. Dooley et al, Sec. 85, Blk. A, G. M. M. & A. Sur. — Spudding.

WINKLER COUNTY

Amerada Pet. Corp.'s No. 1 J. B. Walton, SW cor. NW Sec. 48, Blk. 26, elev. 2,833 ft. — Top salt 1,086 ft.; 2,500,000 ft. gas 1,760-08 ft.; killed gas with 3½ tons baroid; cored brown lime carrying oil 2,334 ft.; show gas 2,400 ft.; blew tools up in hole; fished out and drilled to 2,411 ft. where another pocket of gas again caused fish. job; unscrewed casing 1 joint above tools; fishing.
Atlantic O. P. Co.'s No. 1 Ida Hendrick-B, SE cor. W half NE Sec. 44, Blk. 26 — Show gas 2,770 ft.; top pay 2,820 ft.; fishing bit 2,936 ft.; aver. 246 bbls. past week.
Atlantic O. P. Co.'s No. 2 Grisham-Hunter, Sec. 34, Blk. B-5 — Drlg. 2,925 ft.
Atlantic O. P. Co.'s No. 3 Grisham-Hunter, Sec. 34, Blk. B-5 — Topped salt 1,315 ft; stand'g'g 2,-535 ft.
Atlantic O. P. Co.'s No. 4 Grisham-Hunter, Sec. 34, Blk. B-5 — Drlg., 570 ft., red shale.
Atlantic O. P. Co.'s No. 1 Grisham-Hunter-C (was Lemar) SW cor. Sec. 40, Blk. B-5 — Drlg. 2,730 ft.
Atlantic O. P. Co.'s No. 1 Ida Hendrick-D, SE cor. S half NW Sec. 29, Blk. B-5 — Top pay 2,870 ft.; total depth 3,-615 ft., making 2,915 bbls., 3 per cent water and 4 per cent b.s.
Atlantic O. P. Co.'s No. 2 Ida Hendrick-D — Drlg. 2,881 ft.
Atlantic O. P. Co.'s No. 1 Grisham-Hunter-E, SW cor. N half NE Sec. 41, Blk. B-5 — Drlg. 2,450 ft.
Atlantic O. P. and Collett's No. 1 Ida Hendrick-F, NE cor. W half NW Sec. 40, Blk. 26 — Drlg. 1,330 ft.
V. T. Bolin et al's No. 1 Brown — Spudded and shut down.
Magnolia Pet. Co.'s (was G. M. Church et al's) No. 2 Ida Hendrick — Show oil 2,750 ft.; top pay 2,865 ft.; deepened from 2,955 ft. to 2,961 ft., flowing 90 per cent water.
Magnolia Pet. Co.'s No. 3 Ida Hendrick — Cem. 8-in. 2,425 ft.; drlg. 2,575 ft.
Cranfill Bros. and California Co.'s No. 1 M. J. Bashara, at cor. Secs. 10, 11, 22 and 23, School Blk. 77 — Total depth 3,503 ft. (s.l.m.); shut down for orders.
Cranfill & Reynold's No. 1 Grisham-Hunter-B, Sec. 35, Blk. B-5 — Show oil 2,650-55 ft.; drlg. 2,861 ft., est. 5,000,000 ft. gas.
Cranfill & Reynolds' No. 1 Hendricks-C — Drlg. red beds 1,270 ft.
Eastland Oil Co. and Arnold's No. 1, Sec. 35, Blk. B-5 — Show oil 2,675 ft.;S.D. 2,715 ft., est. 20,000,000 ft. gas and spraying oil.
Gulf Prod. Co.'s No. 2 T. G. Hendrick, NE NW NW Sec. 34, Blk. B-5 — Rig standing.
Gulf Prod. Co.'s No. 8 T. G. Hendrick, Sec. 34 — Drlg. 700 feet.
Gulf Prod. Co.'s No. 9 T. G. Hendrick, Sec. 34 — Cem. 12-in. 478 ft.
Gulf Prod. Co.'s No. 10 T. G. Hendrick, SW cor. NE Sec. 45, Blk. 26 — Location.
Humble O. & R. Co.'s No. 1 T. G. Hendrick, NW cor. NE Sec. 34, Blk. B-5, Public School Land, elev. 2,816 ft. — Total depth 2,763 ft.; fished out one bit; gas which had been killed broke loose again; trying to drill by tools 2,743 ft.
Humble O. & R. Co.'s No. 3 Hendrick, Sec. 34, Blk. B-5 — 5,000,000 ft. gas from 2,195 ft.; spraying 25 bbls. oil and est. 20,000,000 ft. gas at 2,898 ft.
Humble O. & R. Co.'s No. 5 Hendrick, SW cor. NE Sec. 34, Blk. B-5 — Drlg. 1,910 ft.
Humble O. & R. Co.'s No. 2 Ida Hendricks, Sec. 29 — Cem. 12-in. 262 ft.; drlg. 265 ft.
Independent O. & G. Co.'s No. 3 Grisham-Hunter, Sec. 34 — Location.
Independent O. & G. Co.'s No. 4 Grisham-Hunter — Location.
Independent O. & G. Co.'s No. 5 Grisham-Hunter — Drlg. 1,220 ft.
Independent O. & G. Co.'s No. 6 Grisham-Hunter — Drlg. 930 ft.
Independent O. & G. Co.'s No. 7 Grisham-Hunter — Drlg. 1,225 ft.
Independent O. & G. Co.'s No. 8 Grisham-Hunter — Rigging up rotary.
Independent O. & G. Co.'s No. 2 Grisham-Hunter — Top pay and total depth 2,815 ft.; making 229 bbls., pinched.
Independent O. & G. Co.'s No. 1 Vardeman-B, SE cor. E half NW Sec. 41, Blk. B-5 — Top salt 1,775 ft.; drlg plug 2,-315 ft.
Independent O. & G. Co.'s No. 2 Vardeman-B — Lost returns 290 ft.
Independent O. & G. Co.'s No. 3 Vardeman-B — Derrick.
Liner Drlg. Co.'s No. 1 Seth-Campbell, NE cor. Sec. 2, Blk. B-5 — Shut down 450 ft.
Landreth Prod. Corp.'s No. 1 Hendrick-A, SE cor. SW Sec. 29, Blk. B-5 — Total depth 3,013 ft.; aver. 36 bbls. daily past week; clean. out to deepen; fish. for bit.
Landreth and Roxana's No. 2 Ida Hendrick-A, Sec. 29, Blk. B-5 — Partly rigged and shut down.
Landreth and Roxana's No. 3 Ida Hendrick-A, Sec. 29, Blk. B-5 — Drlg. 1,700 ft.
Magnolia Pet. Co.'s No. 4 Ida Hendrick, Sec. 29, Blk. B-5 — Drlg. cem. plug 2,494 ft.
Magnolia Pet. Co.'s No. 5 Ida Hendrick — Drlg. anhydrite 1,240 ft.
Magnolia Pet. Co.'s No. 6 Ida Hendrick, Sec. 29, Blk B-5 — Cem. 12-in. at 204 ft.
Murchison Oil Co. et al's No. 1 Grisham-Hunter-B, NE cor. SW SW Sec. 35, Blk. B-5 — Standing 2,427 ft.
Murchison Oil Co. et al's No. 2 Grisham-Hunter-B — Location.
Murchison Oil Co. et al's No. 3 Grisham-Hunter-B — Making 465 bbls. 2,890-3,050 ft.; cleaning out.
Murchison Oil Co. et al's (was Marland Oil Co.'s) No. 4 Grisham-Hunter-B — Shut down 2,855 ft
Mining & Engineering Co.'s No. 1 T. G. Hendrick, Sec. 10, Blk. B-12 — Partly rigged and shut down.
Murchison Oil Co. and Cranfill Bros.' No. 2 Grisham-Hunter-A — Location.
Murchison Oil Co. and Cranfill Bros.' No. 4 Grisham-Hunter — Location.
The Texas Company's (was Pure Oil Co.'s) No. 2 Hendrick, elev. 2,827 ft. — Top salt 1,518 ft.; top lime 2,390 ft.; spraying oil with 15,000,000 ft. gas 2,657-2,825 ft.; flowed 85 bbls. first hr. from 2,657-2,880 ft.
The Texas Company's (was Pure Oil Co.'s) No. 3 Hendrick, NE cor. SW Sec. 41, Blk. B-5 — Drlg. 2,540 ft.
The Texas Company's (was Pure Oil Co.'s) No. 1 Hendrick-B, NE cor. SE Sec. 34, Blk. B-5 — Show gas 2,350-60 ft.; show oil 2,380 ft.; 15,000,000 ft. gas at 2,490 ft.; more gas 2,564 ft.; 40,000,000 ft. gas at 2,720 ft.; will run 6-in. 2,731 ft.
The Texas Company's (was Pure Oil Co.'s) No. 2 Hendrick-B — Top lime 2,387 ft.; top pay 2,808 ft.; flow, small heads; S.D. for orders 2,866 ft.
The Texas Company's (was Pure Oil Co.'s) No. 3 Hendrick-B — Cem. 8-in. 2,438 ft.; 4,000,000 ft. gas 2,600 ft.; S.D. for orders 2,-860 ft.
The Texas Company's (was Pure Oil Co.'s) No. 4 Hendrick-B — Set 12-in. pipe 263 ft.
The Texas Company's No. 5 Hendrick-B, SE SW SE Sec. 34, Blk. B-5 — Building rig.
The Texas Co.'s (was Pure Oil Co.'s) No. 6 Hendrick-B — Moving in material.
The Texas Company's No. 1 Grisham-Hunter-C — Rigging up rotary.
Republic Prod. Co.'s No. 1-A Grisham-Hunter-B, SW cor. E half SE Sec. 41, Blk. B-5 — Drlg. plug. 2,008 ft. and shut down.
Republic Prod. Co.'s No. 2 Grisham-Hunter-B — Drlg. 2,640 ft.
Republic Prod. Co.'s No. 2 Hendrick-A, NE E half SW Sec. 45, Blk. 26 — Building rig.
Roxana Pet. Corp.'s No. 1 Grisham-Hunter-A, SW cor. E half NW Sec. 45, School Blk. 26 — Top lime 2,428 ft.; pinched to 446 bbls., T.D. 2,828 ft.
Roxana Pet. Corp.'s No. 2 Grisham-Hunter-A, SE cor. E half NW Sec. 45, Blk. 26 — Rigging up rotary.
Roxana Pet. Corp.'s No. 1 Grisham-Hunter-B, SW cor. S half SE Sec. 29, Blk. B-5 — Top lime 2,657 ft.; show oil and gas 2,630 ft.; fishing bailer 3,010 ft.
Roxana Pet. Corp.'s No. 2 Grisham-Hunter-B — Drlg. 1,076 ft. anhydrite.
Roxana Pet. Corp.'s No. 3 Grisham-Hunter-B — Rigging up rotary.
Roxana Pet. Corp.'s No. 2 Grisham-Hunter-C, SE cor. N half NW Sec. 29, Blk. B-5 — Top salt 1,405 ft.; drlg. lime 2,-808 ft.
Roxana Pet. Corp.'s No. 3 Grisham-Hunter-C — Top salt 1,571 ft.; drlg. ahead.
Roxana Pet. Corp.'s No. 4 Grisham-Hunter-C — Drlg. anhydrite 1,300 ft.
Roxana Pet. Corp.'s No. 5 Grisham-Hunter-C — Drlg. red beds 1,150 ft.
Roxana Pet. Corp.'s No. 1 Grisham-Hunter-D, SW cor. S half NE Sec. 41, Blk. B-5 — Show oil and gas 2,504 ft.; mixing mud to kill gas, est. 50,-000,000 ft.; T.D. 2,712 ft.
Roxana Pet. Corp.s No. 2 Grisham-Hunter-D — Setting 12-inch. 363 ft.
Sheldon & Burden's No. 1 Ida Hendrick, SW cor. SE Sec. 28, Blk. B-5 (10-a. tract) — Top salt 1,260 ft.; top lime 2,-609 ft.; show oil 2,730 ft. and 2,820 ft.
Southern C. O. P. Co.'s No. 2 Ida Hendrick T-88-B — Total depth 2,659 ft.; cem. 6-in. in lime; stand. cem.
Southern C. O. P. Co.'s No. 2 T-89 Grisham-Hunter-A, Sec. 35, Blk. B-5 — Standardizing 2,301 ft.
Southern C. O. P. Co.'s No. 3 T-89-A Grisham-Hunter-A — First gas 2,400 ft.; 3,000,000 ft. gas 2,415-20 ft.; cem. 6-in. casing.
Southern C. O. P. Co.'s No. 4 T-89-A Grisham-Hunter-A — Rig. up rotary.
Texon O. & L. Co.'s No. 2 Grisham-Hunter-A — 5,000,000 ft. gas 2,260-2,500 ft.; 15,000,000 ft. gas 2,646-56 ft.; total depth 2,725 ft.; killing gas to fish. tools; 50,000,000 ft. gas.
Texon O. & L. Co.'s No. 3 Grisham-Hunter-A, NW cor. W half SE Sec. 41, Blk. B-5 — Drlg. plug. 2,140 ft.
Texon O. & L. Co.'s No. 1 Grisham-Hunter-B, NW cor. W half SW Sec. 45, School Blk. 26 — Cem. 6-in. 2,562 ft.
Texon O. & L. Co.'s No. 2 Grisham-Hunter-B, NE W half SW Sec. 45, Blk. 26 — Cem. 8-in. 2,506 ft.; drlg. plug.
White Eagle O. & R. Co.'s (was Gibson & Johnson's) No. 1 P. A. Lock, 1,320 ft. W of NE cor. Sec. 30, Blk. 74, NW of discovery well, elev. 2,830 ft. — Total depth 3,260 ft.; fish. for bailer.
Southern C. O. P. Co.'s No. 1 Ida Hendrick 3-T-67-A, C SW NW NE Sec. 4, Blk. B-12, elev. 2,784 ft. — Top lime 2,638 ft.; slight show oil 3,000-08 ft.; filled up 1,500 ft. sulphur water at 3,065-72 ft.; plugged back to 3,050 ft.; water now shut off; shut down waiting orders.
Southern C. O. P. Co.'s No. 2 Ida Hendrick 3-T-67-A — Standardizing 2,646 ft.
Southern C. O. P. Co.'s No. 2 T-67 Ida Hendrick-F — Top salt 1,715 ft.; drlg. 2,187 ft.
Southern C. O. P. Co.'s No. 3 T-67 Ida Hendrick-F — Top salt 1,702 ft.; drlg. 1,774 ft.
Southern C. O. P. Co.'s No. 4 T-67 Ida Hendrick-F — Drlg. 1,410 ft. red shale.
Southern C. O. P. Co.'s No. 5 T-67 Ida Hendrick-C — Recovered tools 1,770 ft.
Southern C. O. P. Co.'s No. 1 T-67 Hendrick-B, NE cor. SE Sec. 24, Blk. 26 — Top salt 2,210 ft.; top lime 2,645 ft.; total depth 2,648 ft.; drlg. 2,780 ft.
Southern C. O. P. Co.'s No. 2 T-67 Hendrick-B — New location.
Southern C. O. P. Co.'s No. 1 Hendrick 3-T-68-A, SW cor. W half NW Sec. 35, Blk. B-5 — Top salt 1,365 ft.; top lime 2,303 ft.; top pay 2,440 ft., shut down 2,740 ft.; no production; tools bridged hole; est. 90,000,000 ft. gas.
Southern C. O. P. Co.'s No. 2 Hendrick 3-T-68-A — Standardized 2,288 ft. and shut down.
Southern C. O. P. Co.'s No. 3 Hendrick 3-T-68-A — First gas 2,400 ft.; 8,000,000 ft. gas 2,420 ft.; trying to drill past tools.
Southern C. O. P. Co.'s No. 1 T-88 Ida Hendrick-C, NW cor. Sec. 28, Blk. B-5 — 6,000,000 ft. gas 2,665 ft.; fish. tools 2,875 ft.
Southern C. O. P. Co.'s No. 2 T-88 Hendrick-C, Sec. 28, Blk. B-5 — Top pay 2,805 ft.; flowed 1,290 bbls. open at 2,992 ft.
Southern C. O. P. Co.'s No. 3 Ida Hendrick, T-88-C — Drlg. 2,943 ft.
Southern C. O. P. Co.'s No. 4 Ida Hendrick, T-88-C — Cem. 6-in. 2,586 ft. and shut down.
Southern C. O. P. Co.'s No. 5 Ida Hendrick, T-88-C — Standardizing 2,457 ft.
Southern C. O. P. Co.'s No. 6 Ida Hendrick, T-88-C — Cem. 6-in. 2,528 ft.
Southern C. O. P. Co.'s No. 7 Ida Hendrick, T-88-C — Standardizing 2,435 ft.
Turman & Maxwell's No. 1 Ida Hendrick — Shut down for tankage 2,879 ft.; flows about 35 bbls. and 5,000,-000 ft. gas.
Turman & Maxwell's No. 2 Ida Hendrick — 10,000,000 ft. gas 2,865 ft.; drlg. in at 2,884 ft., making 750 bbls.
Turman & Maxwell's No. 3 Ida Hendrick, E half NE Sec. 29, Blk. B-5 — Standardizing 2,582 ft.
Turman & Maxwell's No. 4 Ida Hendrick — Drlg. anhydrite 2,270 ft.
Turman & Maxwell's No. 5 Hendrick, SE cor. E half NE Sec. 29, Blk. B-5 — Rigging up rotary.
Turman & Maxwell's No. 6 Hendrick, NW cor. E half NE Sec. 29, Blk. B-5 — Location.
Southern C. O. P. Co.'s No. 1 Ida Hendrick, T-88-G, SW SE Sec. 28, Blk. B-5 — Location; moved material away.
Southern Crude O. P. Co.'s No. 1 T-88 Hendrick-H — New location.
Southern Crude O. P. Co.'s No. 2 T-88 Hendrick-A — New location.
Southern C. O. P. Co.'s No. 1 Ida Hendrick, T-88-I, SE cor. E half NE Sec 30, Blk. B-5 — Drlg. anhydrite 2,531 ft.
Southern C. O. P. Co.'s No. 1 E. G. Hutchings, T-90, NE cor. E half SE Sec. 47, Blk. 26, elev. 2,835 ft. — Top salt 935 ft.; drlg. 1,035 ft.
Gibson-Johnson & Kessler-Logan's No. 1 Daugherty, SW cor. NE SW Sec. 3, Blk. 74, School Land — Moving in material.
Llano Oil Co.'s No. 1 F. B. Armstrong, at common cor. Secs. 12, 13, 18, and 19, Blk. B-6, School Land — New location.
Roxana Pet. Corp. and Llano Oil Co.'s No. 2 W. F. Scarborough, SW cor. NE Sec. 1, Blk. C-22, School Land — New location.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

ANTIKNOCK VALUE OF NATURAL GASOLINE

Is natural gasoline considered to have greater antiknock qualities than refinery gasoline? Whatever antiknock value a natural gasoline may have, is it the result of the high volatility or the composition of the gasoline?—R. C. R.

We have not enough data to enable us to make a direct statement in answer to the first question. It is known that there is a wide difference in the composition of gasoline as manufactured from different crude oils. This is reflected in motor performance including extent of knocking. Direct gasoline, as obtained from the crude without cracking, must depend upon the composition of the original oil for any appreciable antiknock properties; consequently difference in the character of the substances present results in unequal antiknock values in the gasoline. It is thought that all natural gasolines cannot have the same chemical composition and they therefore must have a different antiknock value depending upon their source. There are several grades of natural gasoline all differing in volatility, which property is considered to have some influence on the antiknock value. A recent development is the manufacture of what is known as stabilized gasoline; this has an excellent distilling range and low vapor tension.

The research work of the Natural Gasoline Association has been under the direction of Dr. G. G. Brown of the University of Michigan. A sample of a natural gasoline as reported by him is given below together with the analysis of a stabilized gasoline, from another source. Temperatures are degrees Fahrenheit.

	Natural	Stabilized
Initial	95	104
Per cent		
20	120	140
50	150	170
80	200	214
Endpoint	350	370
Antiknock value, benzol equivalent	44	35

Doctor Brown states that natural gasoline has an antiknock value between 44 and 47 per cent benzol, which is somewhat higher than the standard of 40 per cent for the standard antiknock fuel, and that undue emphasis has been placed on antiknock rating because of the extensive advertising of some antiknock motor fuels and the introduction of high compression motors. The public has been told to look only to high compression and to forget about general performance; volatility and antiknock value must be discussed together. Natural gasoline is being produced today with such low vapor pressure that it can be shipped in the ordinary tank car and may be blended with other fuels without danger of gassing in the carburetor. These investigations suggest that given sufficient natural gasoline, such as indicated above, for blending with straightrun and cracked gasoline, a motor fuel of high antiknock rating is obtained which has relatively high average volatility. Such a fuel possesses all the advantages of starting and acceleration which volatility can give, and also prevents knocking to any harmful extent in the motor.

THE LIFE OF CRACKING PROCESSES

I would like to know the approximate total run of crude through any given cracking process during the period of commercial life. That is, an approximate estimate of crude processed by each. Such estimates would be of value in the determination of the economic importance of each of the several processes and of the art of cracking in general.—V. G. S.

We are of the opinion that there are so many things involved in the actual commercial life of a cracking unit that no reliable conclusion, such as the question suggests, is possible. There are cracking units which have been in operation for over 10 years and there may be a few which have had even a longer life. The kind and quality of the charging stock is the most important factor influencing the period during which safe operation may be continued. With this is the sulphur content, because the corrosive action of this element, together with its compounds, is so serious in many instances that equipment is rendered useless in a few months which in another locality, when charged with another stock, could be used for years. Temperature and speed are other variables which have a bearing upon the subject and which must be considered.

It appears that cracking units have been subjected to many modifications regardless of type. Even with numerous changes many become obsolete within five to eight years. The market conditions surrounding the sale of gasoline during the past year have been such that some cracking units could not be operated. These economic factors have much to do with operating period of any cracking process.

The Oil and Gas Journal publishes each year a Refinery Survey which contains a list of cracking units, in which type and capacity are shown. This last appeared in the May 10 issue, 1927. This list was first compiled 1924. Additional information, especially for previous years, may be obtained from publications of the United States Bureau of Mines.

Following is a list of the best-known cracking processes, including owners and sales representatives:

Burton—Standard Oil Co. of Indiana, 910 South Michigan Avenue, Chicago, Ill.

Cross—Gasoline Products Co., 700 Baltimore Avenue, Kansas City, Mo.; M. W. Kellogg Co., 7 Dey Street, New York, N. Y. Latter company controls process covered by Black patents.

Dubbs—Universal Oil Products Co., 310 South Michigan Ave., Chicago, Ill.

Fleming—M. W. Kellogg Co., 7 Dey Street, New York, N. Y.

Holmes-Manley—The Texas Company, 17 Battery Place, New York, N. Y.

Isom—Sinclair Refining Co., 45 Nassau Street, New York, N. Y.

Jenkins—Jenkins Petroleum Process Co., 844 Rush Street, Chicago, Ill.; Graver Corp., East Chicago, sales representative.

Tube & Tank—Standard Oil Co. of New Jersey, 26 Broadway, New York, N. Y.

LUBRICATING VALUE OF VARIOUS GRADES OF CRUDES

Will you please advise us where we may obtain information regarding the lubricating value for internal combustion engines of the various grades of crude produced in the United States?—J. S. H.

Lubricating oil is obtained from many different kinds of petroleum and while the type of crude oil is important, the final product may be the result of refining skill. The crudes have been classified as to type as: Paraffin base, asphaltic base, naphthenic and mixed base crude oils.

The paraffin oils, so called because they contain hydrocarbons of the paraffin series, contain more or less wax which has a tendency to cause the lubricating oils made from them to have high pour tests. They have a low gravity, contain little sulphur, nitrogen, and oxygen; they are practically free from asphalt.

The asphaltic crudes contain large quantities of asphalt with appreciable quantities of sulphur, nitrogen and oxygen. They usually contain large quantities of lubricating oils but their deep black color and the character of the sulphur compounds make them difficult to refine into high grade lubricating oils. Because of the absence of wax they yield lubricating oils with low pour tests. They have a high gravity.

Naphthenic crudes are so named because of the presence of large quantities of naphthenes. They yield good lubricating oils with low pour tests.

Mixed crudes are those containing both paraffin and asphaltic compounds. The oil produced in the Mid-Continent district and Mexico is largely mixed base. Many kinds of lubricating oils are manufactured from these crudes.

Studies of all of the various types of oils produced in the United States have been completed by the Bureau of Mines and details of special oils may be found in their bulletins. A list of books on petroleum, including several which contain information about lubricating oils, was published in The Oil and Gas Journal, April 21, 1927, page 164.

SPECIFICATIONS FOR LUBRICATING OILS

Can you give me the following information: What are the specifications of these lubricating oils? S. A. E. 20 and S. A. E. 30?—C. L. J.

These are specifications which have been proposed by the Society of Automotive Engineers. The S. A. E. 20 oil should have a viscosity between 120 and 150 seconds at 130 degrees Fahrenheit. The S. A. E. 30 oil should have a viscosity between 185 and 220 seconds at 130 degrees Fahrenheit. The determination being made with the Saybolt Universal instrument.

The United States Master Specification mentions light lubricating oil with a viscosity between 180 and 220 Saybolt at 100 degrees Fahrenheit; this would probably supply an oil equivalent to the S. A. E. 20. The United States Medium, with a viscosity between 270 and 330, would probably be the equivalent of S. A. E. 30.

CRUDES YIELDING ANTIKNOCK GASOLINE

What are considered to be the best crude oils for making gasoline which has high antiknock value?—H. K. B.

We have not progressed fast enough in our investigations to classify all crudes with respect to their yield of nondetonating motor fuels. It has been shown that oil of the paraffin base type produces a bad knocking gasoline; good antiknockers are obtained from the naphthenic crudes, such as found in California and to some extent in the Mid-Continent. Operating conditions at the refinery have much to do with this property in the finished gasoline.

Practically every oil refiner in the country is intensively studying technical problems connected with origination and performance of antiknock motor fuels and many of them have installed expensive equipment to develop and measure these fuels for their nondetonating qualities. This is one of the outgrowths of the steady trend toward higher compression ratios in automobile engines, a trend which has risen from 4.25 to 1 a few years ago to 5 to 1, and in some cases even higher, today.

Some automotive engineers now say that this movement toward higher compressions in engines has about run its course and that for the present, the trend will not be carried further, possibly never will be. Wide differences of opinion, however, exist on this point among technical authorities and some motor car manufacturers are understood to be experimenting with still higher ratios while others are directing their attention in the other direction.

Growing interest on the part of the public in high compression motor fuels is stimulating oil distributors and refiners to engage in far-reaching experiments and research. A great number of such fuels are being put on the market to meet the demand for nondetonating fuels. Virtually every crude oil produced in the world is now being subjected to tests seeking to establish the character of gasoline from these crudes from the measure of antiknock values. Many crudes vary widely in this quality of their gasoline. In addition, many products which are not petroleum derivatives at all are being studied and used with varying degrees of success.

It appears that there is a great future for oil companies in the marketing of what will be known as "performance motor fuel," or motor fuel which will be sold to fill specific motor car performance needs rather than on technical specifications of gravity and distillation points as today.

LUBRICATING OIL FOR THE NEW FORD

Will the new Ford engine require a different type of lubricating oil? — I. D. O.

The new Ford will no doubt be satisfactorily lubricated by one of the regular grades of lubricating oils used in other cars but no exact specifications of oil have been issued by the Ford company as far as known at present. The problem of lubricating the new Ford should be much less difficult than the old type for the reason there is no need for the addition of soaps and animal fats to eliminate chattering. This is brought about by changing to the gear shift drive. The principal change in the nature of the lubricant will probably be in the elimination of the antichatter compound.

Beyond the Range of All Other Methods

67 feet in length — 10 feet inside diameter —wall thickness 3½ inches

On July 14th, 1927, the record breaking cracking still shown above was completed and shipped.

The achievement in building a cracking still of such capacity, important as it is to the oil refining industry, is overshadowed by the co-ordination of engineering, laboratory and production facilities that make possible the building of Smithsteel Cracking Stills, large or small, standard or special, to meet usual or unusual refinery requirements.

The Largest Still Ever Built

This still is the largest cracking still ever built, almost 70 feet long, 10 feet inside diameter, and wall thickness of 3½ inches, weight 366,600 lbs. The largest still built previously was also of Smithsteel, with a length of 65 feet, diameter of 8 feet and wall thickness of 3½ inches, weight 268,000 lbs.

A. O. SMITH CORPORATION

Oil & Gas Field Products Division *General Offices*—Milwaukee, Wis.

District Offices at Pittsburgh, Tulsa, Dallas, Los Angeles

SMITHSTEEL CRACKING STILLS

Of Interest to Sales Departments

OIL EFFICIENT FUEL ON SMALL HEATING JOB

The convenience afforded in the use of oil as an efficient fuel is greatly expanding the number of uses to which it may be put, particularly on small heating jobs. Two such developments have come into use very recently. One of these is a surface heater for use in welding asphalt pavement and the other is a specially constructed oil torch used in a concrete mixer to heat the aggregate when construction work is carried on at freezing temperatures.

Along with the development, it is thought this will stimulate the use of asphalt paving and surfacing for it will make a perfect weld, eliminating the patched appearance and provides a complete vulcanizing of the old paving and the new. The new surface heater is mounted on an auto truck, equipped with a suitable fuel oil tank of approximately 150-gallon capacity which feeds the oil burner. The hot gases are blown against the pavement covered by a steel hood. This hood is about 7 feet square and is mounted on skids so it may be dragged along as the heating progresses. It may also be hoisted over the back of the truck if the apparatus is to be transferred to another job. By heating the old pavement to the vulcanizing temperature and then the new hot asphalt worked in place, there is a complete vulcanizing of the two.

The oil torch used for cement work is so constructed it may be used to heat the cement mixer or heat the concrete after it is in the forms. Cement must be kept at a temperature above 50 degrees Fahrenheit to give a maximum strength and will not satisfactorily set at freezing temperatures. This type of burner will raise the temperature from zero Fahrenheit to 75 degrees Fahrenheit during the time of the mixing and if used to keep the poured concrete warm, will do the work of four to six ordinary coal or wood-fired heaters.

NOVEL GEAR SHIFT LOCOMOTIVE BUILT

What is said to be the first gear shift locomotive was recently built by the Plymouth Locomotive Works. A four-cylinder Diesel engine supplies the power and is designed to operate at speeds of 2½, 4½ and 13½ miles per hour with a pull of 5,000 pounds on the draw bar. The locomotive built will develop 77 horsepower and others are being designed which will be five times as large. The great fuel saving effected through the use of oil and the fact various speeds may be developed by changing gears makes this development popular for the thousands of jobs done daily by donkey steam engines. Ordinary Diesel fuel oil is used in this locomotive and with the expected rapid development of the use of these, a substantial increase in the use of Diesel oil may be expected.

ANNOUNCES NEW GASOLINE

NEW YORK, Jan. 2.—The Warner-Quinlan Co. of New York has announced a new gasoline to be offered through its stations, the new product being given the name "Mileage Plus." Greater mileage, greater power, quicker acceleration in traffic and instant starting in cold weather are claimed to feature this gasoline. The Warner-Quinlan Co. has been operating as producers and distributors of refined oils throughout this territory for many years. The new gasoline was placed on sale January 1.

Short Talks on Specifications

By W. T. Ziegenhain

COMPLAINTS

The handling of a customer's complaint will either give him added confidence in the salesman and his company or will destroy the confidence previously built up. The salesman should assume the customer is right from the beginning and should get all of the facts pertaining to the trouble but should also diplomatically see wherein the customer's methods or equipment or ideas might also be at fault. A few extra hours spent in clearing up a complaint will ordinarily pay much bigger returns in the end, than that much time spent in going from office to office in the actual work of selling.

Servicing the equipment has been the principal talking point of many manufacturing companies who realize their particular kind of equipment is little different from their competitor's. This is true of gasoline and any other petroluem product. There is actually little fundamental difference among the various refiner's products of the same class. To sell, a salesman must have something else to offer than his product in that case. The service offered in getting an order through promptly, the shipping of products fully up to specifications and the correct servicing of credits, etc., are all important but they are a matter of routine and an efficient system will make this the rule. This is not applicable to complaints for each must be handled differently. When a customer issues a complaint he wants some kind of an answer in return at once. He then likes to be kept advised of any developments during the investigation of the complaint and if that advice must be forwarded after he has traced you, it bears less than 50 per cent of the weight it would have if it had come to him first.

A personal investigation of the complaint is preferable when it can be arranged but in most cases this is too expensive and instead, the customer is asked to send a sample of the material to the plant laboratory. It is the salesman's duty to instruct the customer how to take the sample, and how to mark it so that it may be identified at the laboratory. The failure to mark a sample is responsible for a great share of the delays. In every case the name of the material in the sample should be included on the tag or wrapper along with the car number or shipment number, the customer's name, the date and a brief summary of the complaint.

This enables the laboratory to investigate fully the complaint on the points the customer has raised and in many cases, the laboratory can find new angles to investigate. The mere checking of the retained sample held by the refinery is often made a matter of routine and when this information is lacking the usual answer to the customer is to the effect, nothing unusual was shown in the tests and the refinery is unable to account for the trouble. This might be the case, but it is worth a great deal both to the salesman and the customer if one or more details of the case are mentioned either as a suggestion on how to handle the next car when it arrives or that you expect to check that complaint up with other customers to see if they are witnessing the same trouble.

To investigate a complaint properly will take additional time but the friends made by the salesman through the impartial, thorough investigation will usually prove to be lasting customers and the confidence developed will mean he needs to spend less of his time in getting the future orders.

WAX FOUND USEFUL DURING HOLIDAYS TO CLEAN TURKEYS

BARTLESVILLE, Okla., Jan. 2.—During the holiday season a new way to clean goose and turkeys as well as other table fowl was announced by C. O. Parker, Bartlesville agent for the Cities Service Oil Co.

According to Parker, the fowls can be best prepared for the oven by applying wax to the surface of the birds after they have been dressed. This done, he says, all the down and pinfeathers come loose with the wax when it is peeled off and leaves the fowl beautifully dressed.

For an ordinary sized goose or turkey heat about one-third of a pound of household wax and pour it over the carcass, Parker advises. When the wax has cooled, it peels off in sheets, removing all the down and pinfeathers.

LARGE INCREASE IN PRODUCTION OF COKE

Petroleum coke has been able successfully to hold its position in the market during 1927 despite the low fuel oil prices and the development of the use of water power, cheap pulverized coal, and gas. The production will exceed any previous year, as might be expected through the increased use of cracking stills, and will amount to more than 1,000,000 tons by the end of the year.

Production figures for the first 10 months of 1927 given out by the United States Bureau of Mines shows an average monthly production of 93,508 tons while in 1926 the average was 82,942 tons. This represents an increase of 13 per cent. The demand has correspondingly increased. This averaged 89,436 tons for the first 10 months of this year, while it was but 78,600 tons last year. In comparing the consumption and production figures it is apparent there is a continued increase in stocks.

The production and consumption of asphalt has had a similar increase over the year, the monthly average production for 1926 of 243,000 tons increasing to 286,594 tons in 1927. The demand in 1927 promises to practically equal its production, the average monthly consumption amounting to 286,987 tons as compared to 240,000 tons in 1926.

ISSUES BOOKLET

The Louisiana Oil Refining Corp. has issued a very attractive booklet describing the properties and products of the company. Concluding the book is a list of 78 standard products made, including alphalts, alcohols, ink oil, distillates, and special lubricants along with the list of the usual refinery products. In that portion of the book discussing the retail facilities, it is said 135 filling stations are now owned and operated by the company, while 175 more are leased. In addition, 26 stations are owned under lease by the Louisiana Oil Corp., its Mississippi subsidiary.

Indiana Standard Market Department Buys Second Plane

CHICAGO, Dec. 31.—That aerial transportation, both for passengers and express, has become an established fact with the Standard Oil Co. of Indiana as demonstrated by the use of the giant airplane Stanolind, became definitely known today, when it was learned that the company has purchased another airplane.

The new plane, the Stanolind Junior, is a Laird biplane, will carry a pilot and two passengers, will be equipped with a Wright whirlwind motor and was built by the E. M. Laird Airplane Co., of Chicago. It will have a cruising speed of 120 miles per hour and a maximum speed of 138 miles per hour. The use of the Stanolind, which was delivered on May 21, when the initial trip was made, has demonstrated to officials of the Indiana company, the practicability of commercial aviation. Since the first trip was made, the plane has traveled 35,000 miles and carried over 2,100 passengers, of which 300 were Chicagoans. Approximately 14,612 gallons of Stanolind aviation gasoline and 608 gallons of Stanolind aero oil were consumed.

The longest trip was made on July 24, from Chicago to Denver, Colo. The 911 miles consumed 11 hours and 35 minutes. On the return trip of 1,001 miles, from Denver to Wichita, to Kansas City to Chicago, 11 hours and 15 minutes of actual flying time were consumed.

The Stanolind has landed in 40 towns, has visited 24 towns for exhibition purposes and has flown over and circled many more places where landing fields were not available. Since the Stanolind was purchased it has served a dual purpose, that of purely promotional work for commercial aviation and for transporting members of the board of directors on business trips.

Allan Jackson, vice president of the company, and an enthusiast on aviation, in commenting upon the results of the use of the Stanolind said, "We have made 10 business trips especially for our directors, during the six months we have operated the Stanolind. In making these trips, we have flown 11,128 miles. Needless to say, this traveling was done at a great saving of time of the directors of the company. The aggregate mileage, flown by our directors in the Stanolind, amounts to 37,265 miles.

"We have found that very few towns have landing fields adequate for accommodating the larger commercial type of airplane, but happily this condition is slowly changing as the communities realize what is required. As a result of the work done, a large number of people have been put in a receptive frame of mind, whereby they will use aerial transportation where it is available. We have paved the way for air lines, and some new lines are operating partially as a result of what we have done and others are being contemplated by those who see the benefits to be derived from such activities.

"We are thoroughly in favor of aerial transportation for both express and passenger work when using multiple-motored metal plane, and recognize its place in the present and future structure of commerce."

The Oil Industry is *not* Wasteful

QUITE the contrary! Throughout its length and breadth, this huge industry is conserving.

Witness the extensive use of equipment to reduce evaporation and wipe fire out of the picture. Very few of the leading companies the world over but what are using OCECO equipment.

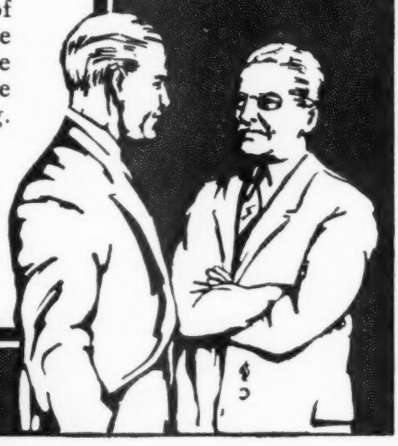
For example—over 65,000,000 barrels of volatile oil are protected by Oceco Flame Arrestors. And this is only one of a score of Oceco conservation products which the oil industry has made a practice of using.

THE OIL CONSERVATION ENGINEERING COMPANY

877 Addison Road Cleveland, Ohio

Engineering and Sales Service:

25 Broadway, New York
O-S Building,
417½ So. Boulder St., Casper, Wyo.
Tulsa, Okla.
Box 552, Beaumont, Texas
Neilan, Schumacher & Co., Los Angeles, Cal.



Making Gasoline from Refinery Vapors

First Necessary to Determine Character and Quantity of Plant's Losses Before Designing Conservation Unit

By W. G. Palmer*
Engineer, J. A. Campbell Co.

Refinery products are the result of vaporization and condensation, a process in use today for the sole reason that nothing better has been worked out. Some day a method will be evolved, we hope, by which crude can be separated into its component parts without recourse to the complexly wasteful vapor route. Vapors vary considerably both in quantity and quality, depending on the character of the crude, the number of cuts made, and the process employed. Condensation is not as effective as could be desired; there are always vapors that do not condense, regardless of the process used.

Refinery Vapors

These vapors fall into the following classes:

A. Barrel-Still Condenser Vapors (batch-lot distillation).

These vapors are dependent on the character of the crude and the speed with which the distillation is maintained. The time required to run off a 360-bbl. charge is between 13 and 18 hours, depending upon the nature of the crude, and on the number of the cuts to be made. During the first two hours, the vapors are liberated rapidly, the quantity gradually decreasing as the more volatile fractions are driven off. The classification of these vapors here follows:

1. Nineteen degrees A.P.I. crude, gasoline content 21 per cent of 54 degrees A.P.I., with an initial boiling point of 135 degrees Fahrenheit.

Total quantity of vapors discharged from a 360-bbl. charge, 13-hour run, 7,200 cubic feet.

Quantity of vapors discharged during the first one and one-half hours' run, 4,700 cubic feet.

Average gasoline content, gallons per thousand cubic feet, 7.1.

Average condensate temperature, 85 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 20.

Estimated production in gallons, 51.

2. Forty-five degrees A.P.I. crude, gasoline content, 55 per cent of 54 degrees A.P.I., with an initial boiling point of 96 degrees Fahrenheit.

Total quantity of vapors discharged from a 360-bbl. charge, 17-hour run, 29,300 cubic feet.

Quantity of vapors discharged during the first two hours' run, 16,700 cubic feet.

Average gasoline content, gallons per thousand cubic feet, 11.3.

Average condensate temperature, 63 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 81.

Estimated production in gallons, 331.

B. Barrel and Tubular-Still Condenser Vapors (continuous distillation).

These vapors are discharged uniformly as a result of continuous distillation, the crude being pumped through the stills at a consistent rate. In a case of a battery of barrel stills, the vapor is removed overhead at suitable temperatures from each still, as the refining progresses. In tubular stills, the oil is heated in a retort and then expanded in a chamber, the vapors being taken off and condensed; the condensate being called "tops." The classification of these vapors is here given:

1. Seventeen degrees A.P.I. crude with a gasoline content of 19 per cent of 54 degrees A.P.I., having an initial boiling point of 150 degrees Fahrenheit.

Average gasoline content, gallons per thousand cubic feet, 5.

Average condensate temperature, 80 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 32.

2. Enriched 23 degrees A. P. I. crude, gasoline content of 25 per cent of 54 degrees A.P.I., with an initial boiling point of 84 degrees Fahrenheit.

Average gasoline content, gallons per thousand cubic feet, 7 to 10.

Average condensate temperature, 86 to 91 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 64 to 71.

3. Enriched 28 degrees A.P.I. crude, gasoline content of 33 per cent of 54 degrees A.P.I., with an initial boiling point of 86 degrees Fahrenheit.

Average gasoline content, gallons per thousand cubic feet, 9.

Average condensate temperature, 86 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 81.

C. Steam or Re-run Still Vapors (continuous distillation).

At this time attention is called to a statement made in the forepart of this paper, viz., the evaporation from crude is greater than from the products of that crude. To illustrate this, a comparison is made between the data on the vapors of the crude (See B, 3, above), and the data on the vapors from the tops produced from that crude. (See C, 1, below). In spite of the higher condensate temperature from the tops vapor, the vapor yield is less.

1. Tops 48 degrees A.P.I., gasoline content of 66 per cent of 54 degrees A.P.I., with an initial boiling point of 95 degrees Fahrenheit.

Gasoline content, gallons per thousand cubic feet, 8 to 16.

Average condensate temperature, 92 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 66.

2. Tops 35 degrees A.P.I., gasoline content 23 per cent of 54 degrees A.P.I., with an initial boiling point of 160 degrees Fahrenheit.

Average gasoline content, gallons per thousand cubic feet, 8 to 11.

Average condensate temperature, 84 degrees Fahrenheit.

Average vapor yield, cubic feet per barrel, 43.

D. Asphalt Still Vapors.

Vapors containing gasoline from this source may seem out of reason, as the commodity that is run to obtain asphalt and lubricating oils is residuum that has been denuded of the lighter fractions. However, these lighter fractions are present, and are the result of cracking, due to the high temperatures at which the stills are operated. An average vapor yield of 79 cubic feet per barrel has been ascertained for residuum of 15 degrees A.P.I. that was run for lub oils and asphalt. These vapors had a gasoline content of 1.3 gallons per thousand cubic feet.

E. Cracking Process Vapors.

The vapors from this source must be taken from the pressure distillate, run, cut, or re-cycle stock tanks, as the case may be, since no vapor is permitted to escape until the tankage is reached. Data on vapors from a battery of two Cross units of 1,000 bbls. capacity each indicated 900,000 cubic feet of 5-gallon gas per 24 hours. A Dubbs installation of 8 units under observation showed vapor quantities varying between 500,000 and 1,000,000 cubic feet per day, containing 1½ to 4 gallons gasoline.

F. Run Tank Vapors.

The vapors, from crude naphtha of 48 degrees A.P.I. gravity flowing into a 3,000-bbl. run tank, were measured. The gasoline content of the crude naphtha was 65 per cent of 54 degrees A.P.I., with an initial boiling point of 95 degrees Fahrenheit. The rate of flow was 250 bbls. per hour.

Total vapors expelled, cubic feet per 24 hours, 61,334.

Gasoline content, gallons per thousand cubic feet, 4.

Cubic feet of vapor per barrel run, 11.

Estimated production gallons per day, 245.

G. Storage Tank Vapors.

In the former part of this paper is a series of tests on vapors from storage tanks. These tests are of such a nature that they are particularly applicable to refinery storage conditions.

H. Vapors From Blending Operations.

Tests have shown that vapor quantities from 20 to 200 cubic feet per barrel of casinghead blended have been lost. The gasoline content of this loss varied between 3 and 16 gallons per 1,000 cubic feet.

I. Vapors From Treating Operations.

These vapors are available for recovery, but, due to the possibility of contamination, they are not, as a rule, recovered. Their recovery is a matter of individual opinion. These vapors will compare favorably, in both quantity and quality, with those of blending operations.

J. Tank Car and Truck Loading Vapors.

The recovery of these vapors calls for equipment suitable thereto, such as adaptable heads and dome covers, that can be readily installed and removed. At the present time, there is not a successful piece of apparatus for this purpose; and this, regardless of the numerous articles of this type for sale. The vapors from this source will vary in quantity between 10 and 110 cubic feet per barrel transferred. The gasoline content of this vapor will fall between 2 andt 18 gallons per 1,000 cubic feet. Where utter disregard for the amount of turbulence of the entering fluid have been observed, the foregoing conditions have been exceeded.

K. Casinghead Gasoline Storage Vapors.

As we are well aware, these vapors are responsible for losses that have been observed in excess of 30 per cent. The average may be as low as 10 per cent for unstabilized gasoline. These figures vary according to the method of handling and the character of the commodity handled. Whether or not the vapors from this commodity are desirable for recovery has been the subject of much discussion, the issue being: Is the recirculation of evaporated fractions justifiable?

At the September meeting of the California Natural Gasoline Association, a very excellent paper entitled "Characteristics of Vapors Evolved During the Partial Evaporation of Natural Gasoline" was read by J. J. Delaney. This paper leaves no question as to the identity of the constituents of these vapors. Approximately 50 per cent by volume were found to be propane, and lighter; and an equivalent amount to be composed of butane, and heavier; while only about 6 per cent of the entire quantity was pentane.

In view of this analysis and of our experience in operating gasoline plants, the objections to the recovery and recirculation of these vapors are well founded. However, when their proportion is not too great, the recovery and recirculation is justified. As the result of experiments to determine the effect of recirculation on production, it has been found that a considerable increase occurred.

Refinery Gathering System

The vapor gathering system is the vital part of a recovery installation. This fact should be kept constantly in mind when a system is being installed. Failure to do so results invariably in a series of petty griefs that keep the employe in a perpetual state of dissatisfaction. Too much emphasis cannot be laid on this point. Untold dividends are paid to those operators possessed of sufficient imagination to appreciate the importance of the personal equation, to those endowed with that same wisdom that characterizes the management of a large eastern dairy organization—they believe in "keeping their cows contented." Much of this grief arises from installing lines of insufficient size.

Vapor Sources

Generally, vapor-recovery systems are installed to handle vapors from the following sources:

1. Refinery storage tanks (those that do not have an active part in the refining operations). The same general idea for field vapor-gathering systems, as described in the first part of this paper, may here be applied, thereby rendering further discussion unnecessary.

2. Run or receiving tanks directly associated with refining operations. The run-down, or receiving tanks, system should follow the same recommendations as set forth in Part 1 of this paper (read before you at the November Association meeting). One exception, however, should be mentioned: The vapors from the run-down tank, in order to prevent contamination, should be handled independently, and not through group controls.

3. Refinery condenser boxes and vents. This system will be discussed in

TABLE 1—SUMMARY OF PLANT DATA

Vapor Recovery Plants Operating on Refinery Vapors

(Costs include compressors, buildings, gathering systems and plant equipment, excepting boilers.)

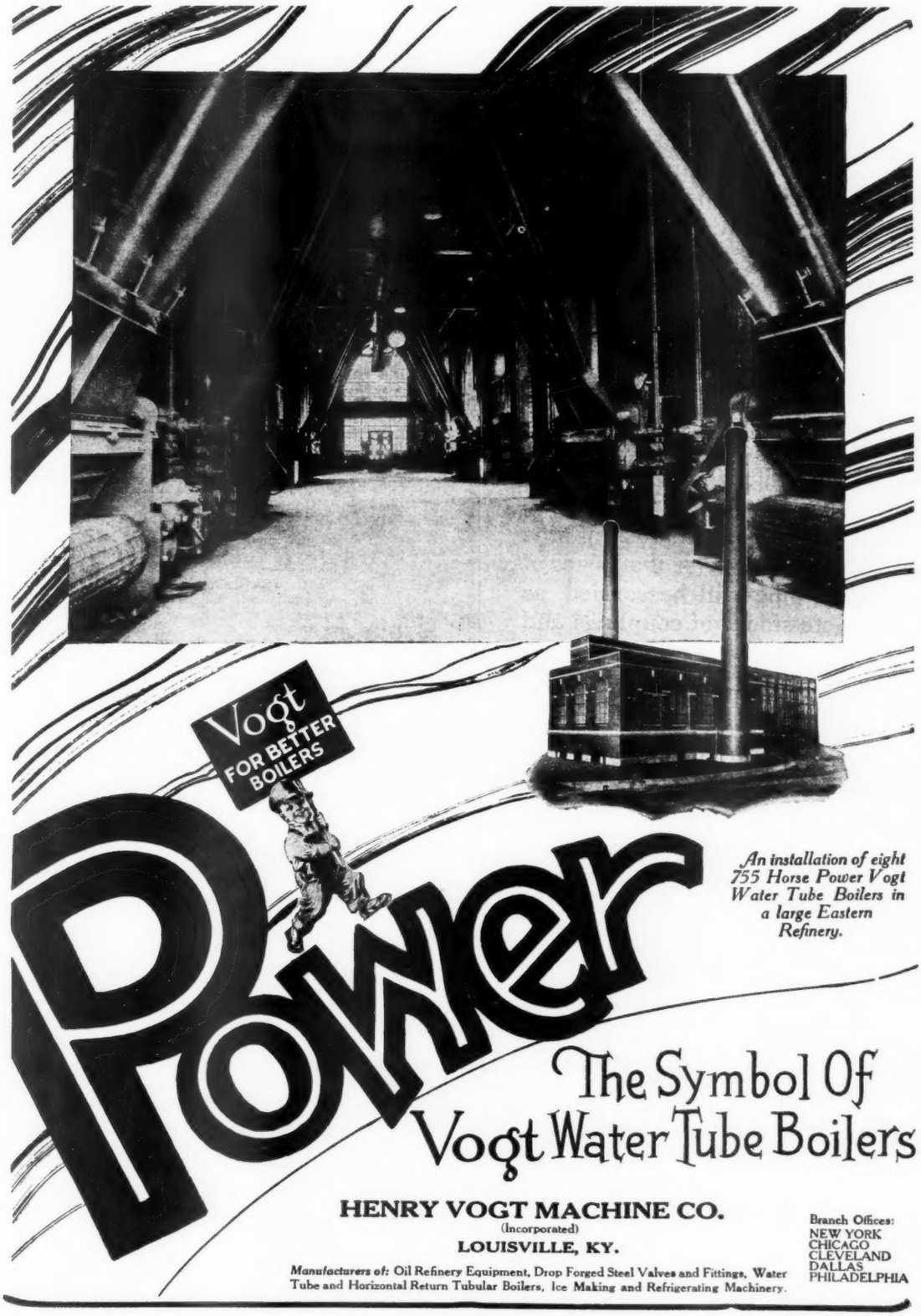
Plant	Cost	Production gals./day	Vapor capacity 1,000 c. f./day	Yield gals./1,000 c. f.
1	$36,000	12,750	2,000	6.35
2	46,000	18,000	2,000	9.0
3	8,500	600	180	3.3
4	14,000	1,100	290	3.8
5	65,000	20,000	1,500	13.3
Total	$169,000	52,450	5,970	8.8

Total yearly production from these plants represent 19,144,250 gallons.
$42,000 additional for adequate boiler plant.
$211,000 total investment for the above plants completely equipped.
An equivalent plant to produce the same amount of gasoline daily from 4 gallons gas can be built for:
Plant, $113,000; compressors, $99,000; gathering systems, $48,000; total, $260,000.

TABLE 2—SUMMARY OF VAPOR RECOVERY PLANTS

	Field vapors	Refinery vapors	Natural gas
Cost of plants	$142,000	$211,000	$352,000
Production, gallons/day	3,701	52,450	56,151
Vapor capacities, 1,000 cubic feet/day	2,400	5,970	14,400
Yield, gallons/1,000 cubic feet	1.54	8.8	3.9
Cost of plant/gallons of gasoline produced	$38.40	$4.30	$6.25
Value of daily production at 9 cents per gallon	$333.09	$4,720.50	$5,053.59
Time required to pay out in days	426	44.7	70

*Paper read before California Natural Gasoline Association.



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Effective immediately, the same service which has won recognition for the Tulsa Pipe & Supply Company of Texas throughout the oil producing industry, is now available to West Texas operators through our new branches located at Iraan, Pecos County, Crane and Rankin, Texas.

These branches are fully equipped with new modern machinery for duplicating our past 24-hour service on nipple and other emergency work. All sizes of pipe threaded. Complete stocks of all sizes of casing and line pipe will be carried, as well as complete stocks of couplings and fittings of all kinds.

Mr. Lew D. Hilton, District Manager, will be in charge of yards and shops in West Texas district with headquarters at Odessa, Texas, and will operate in conjunction with Mr. T. P. Looney, General Manager, located at Amarillo, Texas. Both Mr. Looney and Mr. Hilton have had a wide experience and have been active for a number of years in the oil well supply business and are well known to the fraternity.

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two parts, viz., (A) condenser box laterals, and (B) the main line:

A. **Condenser Box Laterals.**

1. Connections should be taken off of the look box, or off of the run-down line, between the look box and condenser.

2. The installation of a device for separating the liquid and the vapor in the run-down line, before the look box, is very desirable.

3. Provision must be made to prevent the return of vapor to the run-down lines. Failure to comply with this precaution will result in the contamination of the refined products, the degree depending on the method of operation.

4. The size of the lateral should be such that no back pressure will develop on the condenser coils and look boxes.

5. The still relief valve must be inspected and tested periodically.

6. Each lateral must be provided with a shut-off cock.

7. All laterals must be as short and direct as is possible to install, and should drain to the condenser coil.

8. Lateral connections to the main line should be at the top of the main line.

9. The use of control valves on these laterals is optional.

B. **The Main Line.**

1. Too much emphasis cannot be placed on the matter of selecting the proper line size for handling these vapors. The specific gravity of these vapors has tested as high as 1.35 (air being 1).

2. In view of the fact that a considerable quantity of vapor will condense in the line (due to temperatures and mechanical action), adequate accumulators must be installed.

3. Lines must be pitched to drain to the recovery plant.

The Recovery Plant

To insure the economic success of a vapor recovery installation, serious consideration must be given to the preliminary survey, the equipment, and the methods of operation.

A. **Preliminary Survey.**

The object of this survey, obviously, is to ascertain the possible production. In a general way the refining loss indicates the potential production from the recoverable vapors. The data here presented will make this clear.

Plant 10

Crude throughput barrels/day, 15,000 to 20,000.

Refinery loss, 2.75 per cent, in barrels, 410 to 550.

Recovery plant production in barrels, 200 to 400.

Percentages recovered of crude throughput, 1.34 to 2; of refinery loss, 49 to 72.

Vapors treated in cubic feet/day, 400,000 to 800,000.

Average vapors per gallon gasoline produced, 50.

Plant 20

Crude throughput in barrels/day, 20,000 to 30,000.

Refinery loss, 3 per cent, in barrels, 600 to 900.

Recovery plant production in barrels, 400 to 700.

Percentages recovered of crude throughput, 2 to 2.3; of refinery loss, 67 to 77.

Vapors treated, cubic feet/day, 1,000,000 to 2,000,000.

Average vapors per gallon gasoline produced, 60 to 70.

It must be remembered that the foregoing has been submitted for comparative purposes only, and considerable variation is to be expected from different problems.

B. **Recovery Plant Equipment.**

When selecting equipment for a recovery plant, the purchaser should not be too conservative. The question should be: How good can this equipment be? rather than, How cheap is it possible to get by? The initial investment is not the primary consideration. The truth of this statement is driven home when the failure of one part of a process jeopardizes the whole installation.

C. **Methods of Operation.**

The methods of operation are as follows:

1. As a natural gasoline plant (a complete, self-contained unit, producing a finished product.)

2. As an extraction unit. Its function is to remove the gasoline content of the vapors by means of (a) an absorbent medium, the distillation of which is carried on in refinery equipment, or (b) compression and cooling, (c) or both.

3. As a blending plant in which gasoline of a high initial is used as an absorbent medium, through which the still vapors are passed after cooling. This process raises the gravity of the gasoline and lowers the initial boiling point. At one plant operating in this manner, the initial was lowered 25 degrees Fahrenheit and the gravity was raised 3 to 4 degrees A.P.I. There was left in the dry gas ficient gasoline for further recovery. The gasoline used for the absorbent medium was brought to a marketable quality.

Plant Products

The product of refinery vapor-recovery plants is comparatively stable. Rarely is the recovery below 90 per cent. The gravity will vary between 64 degrees and 80 degrees A.P.I. Distillation curves will show the initial boiling points to vary between 85 degrees and 100 degrees Fahrenheit, and will follow the contour of curves from distillations of straightrun domestic gasoline. The endpoint, being a factor of individual plant control, is optional.

Data on Operating Plants

In anticipation of any questions that might arise concerning the economic phase of the refinery recovery plant, installation, and operation, tabulated data from operating plants are herewith submitted.

Refinery 1-A

Source of vapor: Tubular stills. Continuous operation. Two cuts 48 degrees Baume tops and residuum.

Total crude throughput/24 hours, 19,000 bbls. 28 degrees Baume gravity, 24 per cent 54 degrees Baume gasoline.

Total vapor, 1,500,000 cubic feet/24 hours to conservation plant.

Total conservation plant production. Daily average, 7,850 gallons 82 degrees Baume gasoline.

Average yearly conservation plant yield gas/1,000 cubic feet of vapor, 5.2.

Vapor yield per barrel crude throughput, 65 cubic feet.

Average temperature of condensate, 89 degrees Fahrenheit.

Refinery 1-B

Source of vapor: Steam stills. Continuous operation. Reruning 48 degrees Baume tops.

Total tops throughput, 6,600 bbls./24 hours, 65 per cent 54 degrees Baume gasoline.

Total vapor, 500,000 cubic feet/24 hours to conservation plant.

Total conservation plant production. Daily average, 4,900 gallons 78 degrees Baume.

Average yearly conservation plant yield gas/1,000 cubic feet of vapor, 9.9.

Vapor yield/barrel of tops throughput, 66 cubic feet.

Average temperature of condensate, 92 degrees Fahrenheit.

Refinery 2

Source of vapors: Storage and rundown tanks. Continuous topping. Tubular stills.

Total crude throughput/24 hours, 23,000 bbls. 28 degrees Baume crude, 24 per cent 54 degrees Baume gasoline.

Total vapor, 2,000,000 cubic feet/24 hours to conservation plant.

Total conservation plant production daily average, 18,000 gallons (this plant has made 29,000 gallons/day) 88 degrees Baume gasoline.

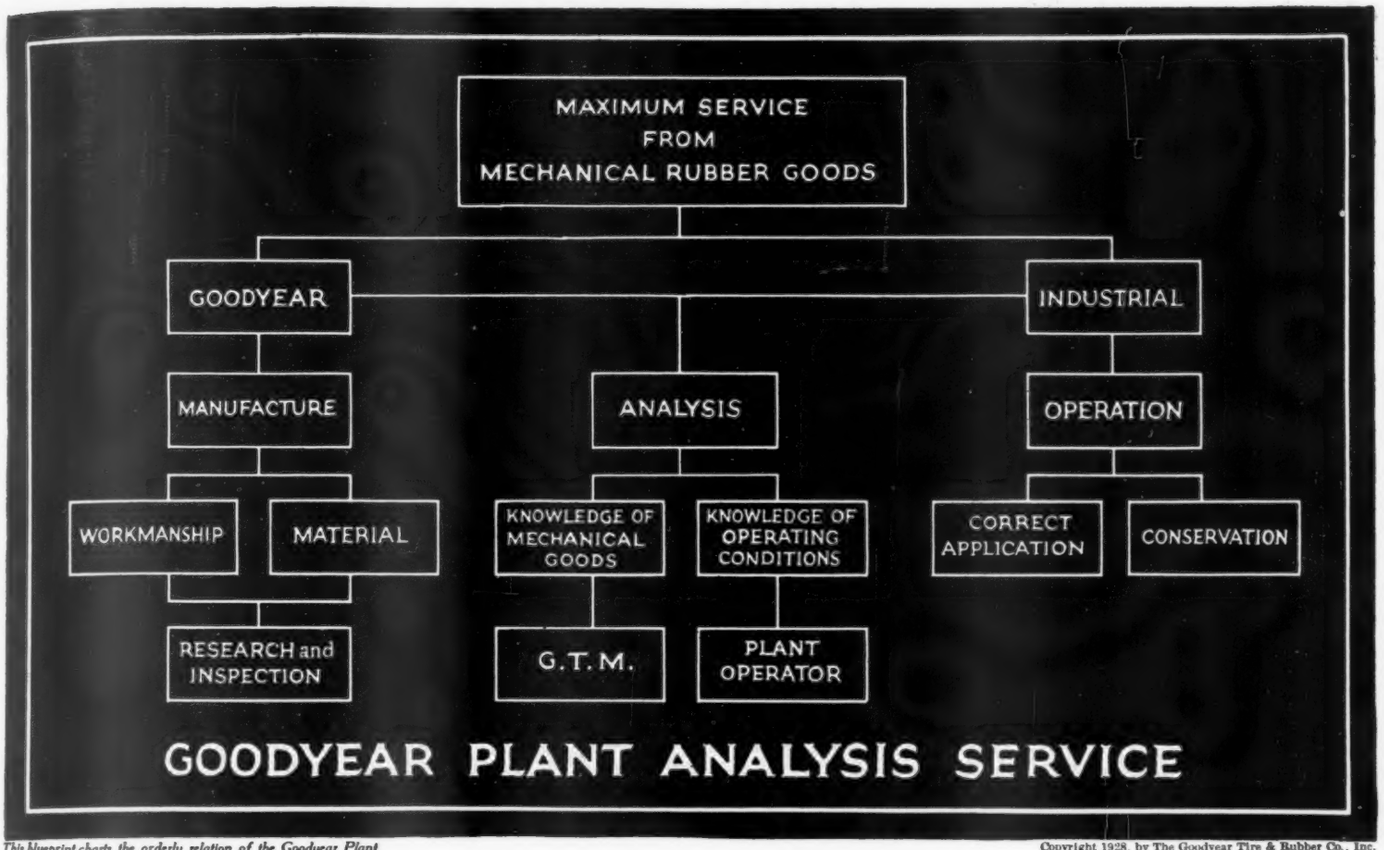
Average yearly conservation plant yield, gallons/1,000 cubic feet of vapor, 9.0.

Vapor yield per barrel crude throughput, 83 cubic feet.

Average condensate temperature, 82 degrees Fahrenheit.

NEW SIMMS DIRECTORS

Three changes on the board of directors of the Simms Petroleum Co. are announced. Thomas J. Megear, James H. Barr and Stephen Leonard were elected directors, succeeding Matthew C. Brush, Harry Bronner and John J. Watson.



This blueprint charts the orderly relation of the Goodyear Plant Analysis Plan for maximum service from mechanical rubber goods

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The Plant Analysis Plan—and the G. T. M.

This chart is important to every man who has to deal with belting, hose or packing problems. It shows the principal factors in the Goodyear Plant Analysis Plan, and makes clear the part that is played in more efficient, economical plant equipment by the G. T. M.—Goodyear Technical Man.

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The G. T. M. is an expert on mechanical rubber goods. He knows their special properties. He is trained in the science of their specification and application. His work takes him into many plants, in many industries, so that he is familiar with most transmission and conveying problems, and is a practical authority on many of them.

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His entire purpose is to fit what he knows about belting, hose or packing to the demonstrated conditions of service in your plant. If he can find out what you can use to best advantage, he will recommend it to you. Then, on your order, Goodyear will build your equipment according to those approved specifications. And after it is installed, the G. T. M. will follow it up with a service that will see that you get out of your equipment all the value built into it by this scientific analysis and careful manufacture.

Doesn't it stand to reason that you are likely to get the utmost in trouble-free, long-wearing service out of that kind of equipment? The proof of the Goodyear Analysis Plan is in the records—many of them published in these pages during the past ten years—of better, more productive and more economical work done by G. T. M. specified goods in hundreds of plants, in every line of industry.

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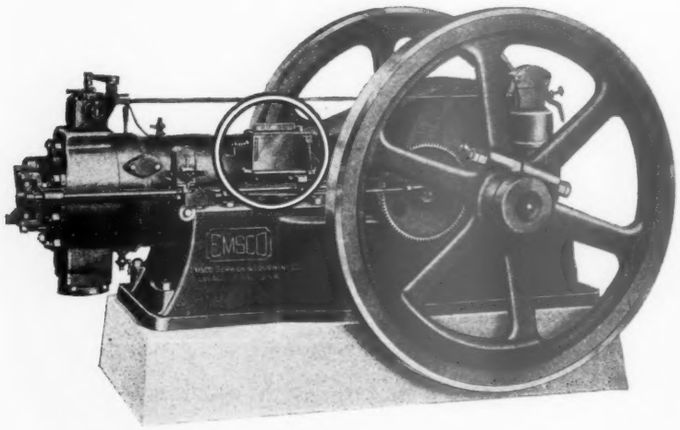

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Fresh Oil is unfailingly supplied to the cylinders and the bearings of the EMSCO Engines by the Madison-Kipp Lubricator.

Due to the unique Madison-Kipp valveless and registering-port principle, the Madison-Kipp Lubricator unfailingly delivers Fresh Oil in measured quantities to the cylinders, regardless of the speed at which either engine or lubricator is running.

So long as the engine or pump equipped with Madison-Kipp Lubricators runs, the Madison-Kipp *keeps it properly lubricated.*

The sight feed indicator shows accurately the oil *that it delivered to the engine.*

Madison-Kipp Lubricators are flexible in size, oil feed adjustment, type and drive location. They can be readily applied to any engine, pump or compressor in the field. They are built with the ruggedness necessary to stand up to oil field work for *long periods* of time *without repair.*

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Oil, Gas, Steam Drilling Engines
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Compressors
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PIPE MANUFACTURE INSPECTION; TAPER, SIZE, ALIGNMENT CHECKS

By H. G. Texter*

In upset tubing and drill pipe the strength of the joint has been increased by thickening the wall under the coupling so that even after the thread has been cut there is enough metal remaining to give a joint strength more than 100 per cent of that of the tube body. This is true for tension, compression, torque or bending and in all cases of failure the break should be found some distance away from the joint if manufactured to A.P.I. specifications and if properly made up.

Casing, unfortunately, cannot be thickened, or upset, at the joint because clearance for telescoping strings is a prime consideration. At best, then, a casing joint cannot have an efficiency in resistance to tension of greater than about 60 cent. This means that a string of casing would part by "jumping a collar" with 40 per cent less pulling force than would be required to break the full area of metal in the body of the pipe. In resistance to collapse the coupling acts as a reinforcement so that the joint efficiency in this respect is practically 100 per cent. Since, however, the pulling out strength is often the deciding factor, as in long strings which must be underreamed, it is very necessary to keep it as high as possible.

Fig. 1—Checking pipe for taper.

Fig. 2—Checking coupling for taper—note special gauge developed for this work.

Deciding Factors

Aside from the strength of metal in the body of the pipe, which may be kept very high in seamless by using high carbon or even alloy steel, the deciding factors in pulling out strength efficiency are taper, size and alignment of the pipe and coupling threads. It is at these points that deviation from the true standard causes rapid decrease in the maximum pulling strength efficiency and it is here that rigid inspection practice will amply repay the cost.

The taper, for example, need vary but a few thousandths of an inch per inch from the specified taper to give a further reduction in joint strength of 10 per cent to say nothing of probable galling when breaking out. (Poor taper, also poor size, can be compensating if both pipe and coupling threads err equally on the same side, but we can never assume such a condition even on pipe coming from the same mill.)

Fig. 3—Checking pipe thread for size.

To insure very accurate taper it is not enough to see that thread cutting dies are properly designed and set. Constant checking and rechecking of the threads themselves must be made as shown in Figures 1 and 2.

Fig. 4—Checking couplings for size.

Determining Taper

The taper on the pipe is easily determined with specially designed micrometers by taking two diameter readings an inch apart. The difference in diameter, for a three-eighths taper thread, should be .032 inch. Any amount over this would be a plus taper. Limits above or below are now determined by the accepted A.P.I. specifications. To make sure that the taper is a straight line taper a third reading is taken another inch toward the shoulder thus giving two taper readings on each thread inspected.

Coupling tapers are not so easily determined as it is difficult to take accurate inside micrometer readings. Double plug taper gauges, shown in Figure 2, have been designed and give very accurate

(Continued on Page 160)

*District sales manager, Standard Seamless Tube Co.

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NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE FIRST REPORTS

Gray County

Guernsey Oil Co.'s No. 2 B. E. McKinney, 264 feet north and 330 feet east of the SW cor. of the north 160 acres of the south 240 acres of the west 400 acres of Section 163, Block 3, I. & G. N. Survey. Phillips Petroleum Co.'s No. 3 W. Jackson-Riley, 330 feet north and east of the SW cor., Section 88, Block B-2, H. & G. N. Survey.

Hutchinson County

Phillips Petroleum Co.'s No. 1 E. Cockrell, 330 feet north and east of the SW cor., Section 2, Block Y.

Moore County

Amarillo Oil Co.'s No. 1 T. Thompson-Amarillo, C Section 22, Block 26, E. L. R. R. Survey.

Potter County

Amarillo Oil Co.'s No. 1 R. B. Masterson-K, C SW, Section 85, Block 018, D. & P. R. R. Survey.

Wheeler County

Mid-Kansas Oil & Gas Co.'s No. 1 J. F. Coates, 330 feet south and east of the NW cor. of the W half of SE, Section 93, Block 17, H. & G. N. Survey. Same company's No. 1 J. L. Newton, 330 feet north and east of the SW cor. of the W half of NW, Section 92, Block 17, H. & G. N. Survey. Watchorn Oil & Gas Co.'s No. 2 Binkley & Cain, C SW SW, Section 19, Block 24, H. & G. N. Survey.

NORTH CENTRAL AND WEST TEXAS FIRST REPORTS

Brewster County

Cowden & Bowser's No. 1 Jackson & Harmon, C of the N half of Section 1, Block 331, T. C. R. R. Survey.

Brown County

Atlantic Oil Producing Co. and Nimrod Oil Co.'s No. 1 A. N. King, 150 feet south and east of the NW cor. of the W. W. Williams Survey, A-2,101. Pandem Oil Corporation's No. 1 A. L. Curry, 1,083 feet south and 150 feet east of the NW cor. of the A. L. Curry 160-acre tract out of the E. L. Betts Survey, A-70. Phillips Petroleum Co.'s No. 11 C. Newsome, 150 feet north and east of the SW cor. of the H. Presslar Survey, A-2,040. Selby Oil & Gas Co.'s No. 24 H. J. Ellis, 150 feet north and west of the most easterly SE cor. of the H. J. Ellis 130-acre tract out of Section 3, S. A. & M. G. Survey, A-850. Wentz Oil Corp.'s No. 1 E. G. Robertson, 2,850 feet north and 1,550 feet west of the SE cor., Section 3, S. A. & M. G. Survey, A-850, being 150 feet south and 450 feet west of the NE cor. of their 50.3-acre lease. Wheelock & Collins' No. 6 M. L. Smith, 740 feet south and 150 feet east of the NW cor. of their 40-acre lease out of Section 3, S. A. & M. G. Survey, A-850. Same company's No. 7 M. L. Smith, 150 feet south and west of the NE cor. of their lease out of Section 3, S. A. & M. G. Survey, A-850. Bush & Spinney's No. 1 D. A. & J. S. Jopling, 1,050 feet northeast of the southwest line and 150 feet northwest of the southeast line of the northwest 107 acres of the G. B. Bragg Survey, A-599. Hammon & Garrett's No. 1 Allen heirs, 150 feet south and west of the NE cor. of the Sebert Waugh Survey No. 124, A-952. George Lamb's No. 2 J. A. Gwathney, 590 feet south and 150 feet west of the NE cor. of the southwest 40 acres of the D. Harris Survey, A-529.

Callahan County

J. E. Glifford's No. 1 P. G. Hatchett, 150 feet south and 1,470 feet east of the NW cor., Section 31, Deaf & Dumb Asylum Land. Homer Peeples' No. 1 C. B. Snyder, 150 feet north and 1,250 feet east of the SW cor., Section 60, Lunatic Asylum Lands.

Coleman County

Coleman Gas Co. and others' No. 1 Mrs. F. Schirmacher, 439 feet north and 837 feet east of the SW cor. of Lot No. 6, M. Martinez Survey No. 751. Humphreys Brothers & Dozier's No. 1 J. T. Floyd, 1,470 feet south and west of the NE cor., Section 24, Coleman County School Land. Andy Urban's No. 1 E. Goodgion, 500 feet south and 283 feet east of the NW cor. of the E. Goodgion 92.6-acre tract out of the E. Williams Survey No. 2, A-835.

Cooke County

Ed Carey and others' No. 2 William Walterscheid, 110 feet north and 450 feet east of the SW cor. of Block 73, Town of Muenster. Murchison Oil Co.'s No. 1 B. F. Mitchell, 150 feet north and east of the SW cor. of the B. F. Mitchell 208-acre tract out of the Thomas Toby Survey, A-1,060.

Eastland County

J. H. Haynes and others' No. 1 L. W. Riddle, 1,200 feet north and 400 feet west of the SE cor. of the E. P. Holley Survey. John W. Hooser's No. 7 W. U. Fox, 1,055 feet north and 407.8 feet east of the SW cor. of Section 67, McLennan County School Land, Leagues No. 3 and 4. Same company's No. 8 W. U. Fox, 755 feet north and 807.8 feet east of the SW cor. of Section 67, McLennan County School Land, Leagues No. 3 and 4.

Chestnut & Smith Corp.'s No. 2 L. T. Griggs, 1,287 feet north and 330 feet west of the SE cor. of the A. Miller Survey. States Oil Corp.'s No. 7 Calvert & Connellee, 450 feet south and 1,120 feet east of the NW cor. of the NE, Section 17, Block 4, H. & T. C. Survey.

Howard County

Bristow & Merrick's No. 1 Dora Roberts, 330 feet north and east of the SW cor., Section 137, Block 29, W. & N. W. Survey. Magnolia Petroleum Co.'s No. 1 Dora Roberts-Magnolia, 2,490 feet north and 1,650 feet west of the SE cor., Section 156, Block 29, W. & N. W. Survey. Owens & Sloan's No. 3 Dora Roberts, 2,440 feet north and west of the NE cor., Section 136, Block 29, W. & N. W. Survey. Same company's No. 4 Dora Roberts, 330 feet north and west of the SE cor., Section 136, Block 29, W. & N. W. Survey. Schermerhorn Oil Co.'s No. 1 Dora Roberts-A, 2,310 feet south and west of the NE cor., Section 137, Block 29, W. & N. W. Survey.

Loving County

Delaware Oil Co.'s No. 1 Lockhart & Ramsey, 330 feet northwest of the southeast line and 330 feet southwest of the northeast line of the southwest 150 acres of the northwest 320 acres of Section 79, Block 1, W. & N. W. Survey.

Menard County

May & Clark's No. 1 Callan Ranch, 990 feet north and west of the SE cor., Section 22, B. S. & F. Survey. Renfro and others' No. 1 J. Davis, C NW SW of the J. Breeher Survey No. 79.

Pecos County

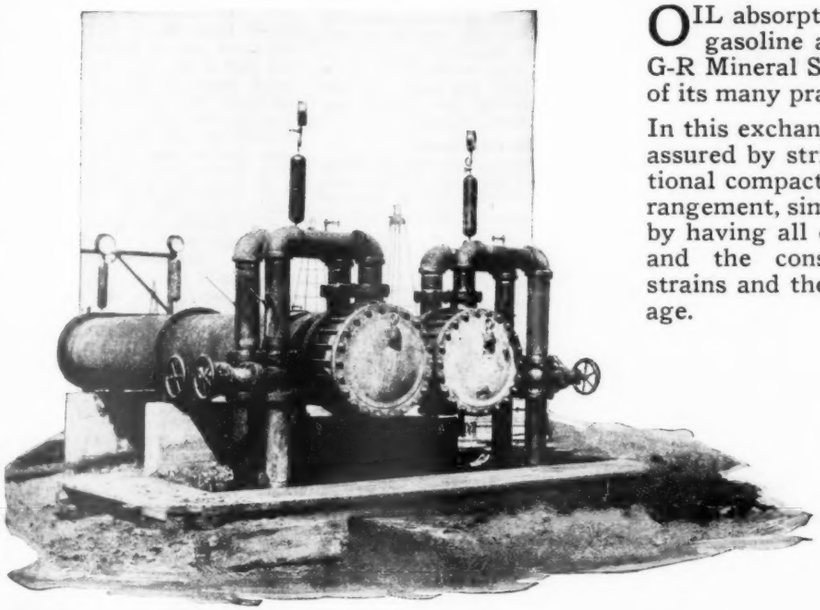
Pandem & Gibson Oil Corp.'s No. 8 Pecos River Bed, 1,628 feet north and 500 feet west of the SE cor., Section 61, Block 1, I. & G. N. Survey, and located in the bed of the Pecos River. Buell & Hagan's No. 1 Pryor & Wilson, 1,570 feet north and 2,240 feet west of the SE cor., Section 16, Block 5, T. C. R. R. Survey.

Shackelford County

Hope Petroleum Co.'s No. 1 W. D. Raynolds, Section 26, 150 feet south and west of the NE cor. SW, Section 26, Block 11, T. & P. R. R. Survey. Humble Oil & Refining Co.'s No. 4 G. R. Davis, 3,660 feet south and 3,644 feet east of the NW cor., Section 219, Block 10, E. T. R. R. Survey. Kingwood Oil Corp.'s No. 1 L. G. Gorsuch, 220 feet south and west of the NE cor. SE NW, Section 82, Block 13, T. P. R. R. Survey. Phillips Petroleum Co.'s No. 4 J. J. Witty, 1,320 feet north and 1,660 feet east of the SW cor., Section 52, Blind Asylum Lands.

M. O. Swallow and others' No. 1 W. D. Reynolds, 150 feet south and 650 feet west of the NE cor. of the S half of NE, Section 25, Block 11, T. P. R. R. Survey. Tannehill Oil Co.'s No. 1 J. B. Matthews, Section 34, 150 feet north and

The G-R Mineral Seal Oil Heat Exchanger



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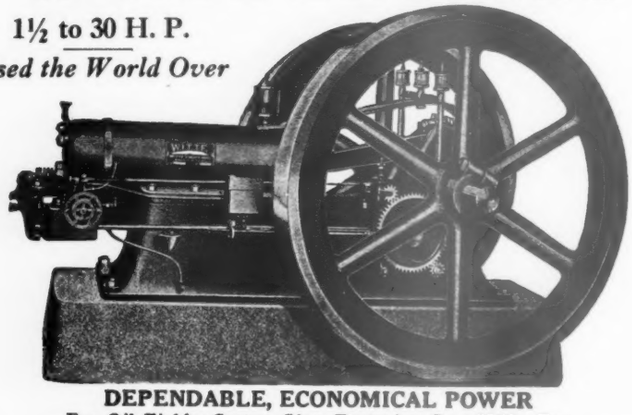

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west of the SE cor., Section 34, Block 10, E. T. R. R. Survey.

Stephens County

Mook-Texas Oil Co.'s No. 5 George Riddle and others, 330 feet south and west of the NE cor. SW, Section 46, Block 6, T. & P. R. R. Survey. Phillips Petroleum Co.'s No. 2 S. H. Post, 648 feet south and 667 feet west of the NE cor., Section 39, Block 6, T. P. R. R. Survey. T. P. Coal & Oil Co.'s No. 6 P. P. Pierce, 2,000 feet north and 300 feet west of the SE cor., Section 92, Block 4, T. P. R. R. Survey.

Wilbarger County

Murchison Oil Co.'s No. 1 W. T. Waggoner-F, 175 feet south and 150 feet west of the NE cor. of the west 40 acres of the south 160 acres of Section 3, S. P. R. R. Survey.

Winkler County

The Texas Company's No. 4 Grisham-Hunter-B, 2,310 feet north and west of the SE cor., Section 34, Block B-5, School Land. Same company's No. 1 Grisham-Hunter-C, 2,310 feet north and west of the SE cor., Section 45, Block 26, School Land. L. C. Turman and others' No. 4 Ida Hendrick, 2,310 feet south and 330 feet west of the NE cor., Section 29, Block B-5, School Land. Gulf Production Co.'s No. 10 T. G. Hendrick, 330 feet north and east of the SW cor. NE, Section 45, Block 26, School Land.

CORRECTED LOCATIONS

Pecos County

Mid-Kansas Oil & Gas Co.'s No. 5 I. G. Yates-B, 811 feet due north and 1,092 feet west of the most easterly SE cor. of Section 61, Block 1, I. & G. N. Survey. Same company's No. 6 I. G. Yates-B, 1,343 feet due north and 1,733 feet west of the most easterly SE cor. of Section 61, Block 1, I. & G. N. Survey. Same company's No. 12 I. G. Yates-B, 1,028 feet due north and 1,011 feet west of the most easterly SE cor. of Section 61, Block 1, I. & G. N. Survey. The California Co.'s No. 9 I. G. Yates, Lease No. 1, 1,717 feet north of the north line of Section 33, and 1,953 feet east of the west line of Section 34, Block 194, G. C. & S. F. Survey. Same company's No. 10 I. G. Yates, Lease No. 1, 1,717 feet north of the north line of Section 33, and 1,412 feet east of the west line of Section 34, Block 194, G. C. & S. F. Survey. Same company's No. 8 M. A. Smith, Lease No. 3, 1,406 feet south and 1,565 feet west of the NE cor. of Section 35, Block 194, G. C. & S. F. Survey.

Shackelford County

Tannehill Oil Co.'s No. 1 J. B. Matthews, Section 58, 150 feet north and west of the SE cor. of the SW of Section 58, Block 10, E. T. R. R. Survey. Same company's No. 2 J. B. Matthews, Section 58, 150 feet north and east of the SW cor. of the SE of Section 58, Block 10, E. T. R. R. Survey. Same company's No. 3 J. B. Matthews, Section 58, 150 feet north and 450 feet west of the SE cor. of the SW of Section 58, Block 10, E. T. R. R. Survey. Same company's No. 4 J. B. Matthews, Section 58, 150 feet north and 750 feet west of the SE cor. of the SW of Section 58, Block 10, E. T. R. R. Survey. Same company's No. 5 J. B. Matthews, Section 58, 150 feet north and 1,050 feet west of the SE cor. of the SW of Section 58, Block 10, E. T. R. R. Survey.

STEEL OUTPUT WELL SUSTAINED; GRADUAL INCREASE IS EXPECTED

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 2 — The year just ended has been a better one in steel than was expected by many observers when the year opened, and that is despite the fact that in several respects underlying conditions turned poorer, around the middle of the year than was expected.

Many observers thought demand for steel in 1927 might easily fall off 10 per cent from that of 1926, which was the record high year, but the decrease is only between 7 and 8 per cent. A few details may be mentioned.

The automobile industry was expected to show a decrease, with production off by say 10 per cent. Instead, production of passenger cars and trucks in the United States and Canada in the first 11 months of 1927 was 21 per cent under that in the same period of 1926, and December production has run very light, so that the year's decrease will be somewhat over 21 per cent.

Railroads were expected to be considerably lighter buyers, and they have bought much less than in 1926. There was no freight car buying after the first week of June, until the latter part of December, and a few cars were bought, which of course will not affect steel production for several weeks.

Oil and Gas Demand

The oil and gas fields were expected to be very poor buyers of casing and well material, and so they have been, but demand for standard or merchant pipe has held up quite well, being only a trifle under that in 1926, while lately there has been much line pipe buying, and altogether the pipe mills, while they have not by any means had a good year, have not had quite as poor a year as expected.

Fabricated structural steel business was expected to fall off, but instead it has made a gain. For six months it had an even break with 1926, while in the past six months it has run ahead, and the year will show a gain of something under 10 per cent over 1926, putting it about even with 1925, thus far the record year.

With the losses in business noted above, the total loss in steel production from 1926 to 1927 of 7 to 8 per cent indicates that some lines of consumption took more steel in the latter year. The agricultural implement industry is one conspicuous instance. It ran well in 1926, but much better still in 1927, and it has very good prospects for the fore part of 1928.

The general outlook now is that there will be a slow increase in steel production in the next few months. For four successive years production has mounted rapidly in January and February, reaching a peak in March, which in each of the four years was the high month of the year. This time the increase in mill operations will probably be more gradual, being perhaps scarcely noticeable in January, and reaching a peak later than March, perhaps in April or even May.

Prices During Year

Nearly all finished steel products declined somewhat in 1927, taking the year as a whole, but in bars, shapes, plates, wire nails and sheets mills have been marking up prices recently. They enter the new year with not a little tonnage on books at old prices, but except in the case of sheets, which are pretty well sold up for first quarter, these obligations will soon be worked off. During 1927 pipe prices declined by 5 per cent in standard pipe and 10 per cent in oil country goods, by increase in the trimmings or discounts from list. These were the first declines since the last general advance, culminating in the lists of April 19, 1923, so that even with the declines pipe has done quite well.

In some directions there was lighter steel production in December, but in other directions there was heavier production, by buying and specifying to avoid price advances, and on the whole steel production was well sustained during the month.

Heavy melting steel scrap delivered Pittsburgh was at $14 to $14.50, its lowest level since 1921, but during the month the market worked up a dollar a ton, being now $15 to $15.50. This, perhaps, will be the limit of the advance as not a little scrap has been held back awaiting better prices.

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Los Angeles—Coast Machinery Corporation, 406 E. Third St.
New York City—E. George & Co., Broome & Wooster Sts.
Philadelphia, Pa.—Maerky Machine Works, 240 Cherry St.
Pittsburgh, Pa.—Motive Parts Co. of Pa., 6314 Penn. Ave.
Raleigh, N. C.—Motor & Equipment Co., 215 E. Davie St.
San Francisco—F. Somers Peterson Co., 57 California St.
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Tulsa, Okla.—Buda Engine Service Co. of Tulsa, Inc.

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KENTUCKY-TENNESSEE

(Continued from Page 60)

hole 440 feet. It was given an 80-quart shot.

In the Sunnydale Field, the Wood Oil Co.'s No. 3 on the J. C. Ralph 21 acres, showed an initial production of 75 bbls., after a 60-quart shot at a total depth of 453 feet. A string of 428 feet of casing was set, sand at from 428 to 442 feet. Same company's No. 3 on the I. L. Wallace farm, was a dry hole.

The Ohio Oil Co. drilled a 5-bbl. initial producer on the J. B. Harrison farm, same county. No. 2, same farm, is drilling. The Leeper Oil Co. is reported to have found a duster in No. 1 on the Belle Sharp farm.

Daviess County

The Hayden farm well, a purely wildcat venture made by C. L. Young and others, in the southern portion of Daviess County, looks like one of the best wells in the Tri-County area at this time and is said to have a large amount of crude above ground in storage, waiting to be connected to the pipe line system. The real daily production of the well is not yet known and will not be until the pipe line has started to handle the crude. This area is going to be a busy spot in the immediate future as much money has been invested in near-by lease and quite a number of new wells are already under way.

Reports are that the Ohio Oil Co.'s well on the Lawrence Roby farm, to the northeast of the Roby Pool, which was opened some time ago by the Leeper Oil Co., is good for 50 bbls., and shows that a nice pool will be found in that vicinity.

Thompson and Tremor drilled a dry hole in a test 1,200 feet from the north line and 200 from the east line of the J. A. Coomes farm, in the Roby Pool, and west of the Frank Coomes 78 acres.

The deep venture by the Rowe Oil & Gas Co. on the Daviess County Poor farm, in a dry hole and the drilling outfit is being transferred to another lease in the vicinity as the company expects to open a productive area there.

The Leeper Oil Co. is reported to be drilling a wildcat well on the Riddle farm, near Utica, same county. Unknown parties have moved a rig to the Herr farm, west of Owensboro on the Main Street Road.

Other Developments

J. B. Taylor is reported drilling a test on his own farm, 4 miles south of Hawesville, in Hancock County.

Miller & Damron are reported starting a well on the Jewell 400 acres north of Bristow, in McLean County. D. T. Bolling and others are also said to be drilling on the Bert Haley farm, 1 mile northeast of the Bristow lease, where Young and Evans are drilling a test.

In the Gainesville Field, in the northeastern part of Allen County, the Mid-Southern Oil Co.'s No. 19 on the Gen. E. H. Woods 2,700-acre ranch, is dry at 265 feet. Sayer and Johnson are drilling No. 5 on the Will Hindrix farm, in the same area. In this well a nice gas flow was found at 350 feet.

In District 4 of the Bowling Green Field of Warren County, the Miami Oil & Gas Co.'s No. 8 on the J. W. Lowe 91 acres, 12 miles north of Bowling Green showed an initial production of 2 bbls. at a depth of 1,334 feet.

Geological Maps

The Kentucky Geological Survey has just issued two very important structural maps. One covers Henderson County, in the western division of the state and the other is of Powell County in the eastern division. Doctor Jillson, state geologist, announced that these maps can be secured from the Geological Survey at Frankfort, Ky.

CENTRAL WEST FIELDS

(Continued from Page 60)

same county, the Ohio Oil Co. abandoned Nos. 1, 2, 4 and 5 W. Mason farm, Section 1; No. 4 L. C. Broyles, Section 2; No. 6 D. Fralick, Section 3, and No. 2 F. E. Palmer, Section 10. J. H. Burnett and others abandoned No. 9 on the Burnett Winchel farm, Section 4. In Plain Township, same county, Lee Rouse is starting a well on the Sangular farm.

No new completions were reported from the Findlay Field of Hancock County. In Portage Township of this county L. D. Langmade abandoned No. 11 on the Edward D. Rhodes, Section 4. In Allen Township, the Ohio Oil Co. did the same with No. 3 on the Margaret E. Brooks, Section 25, and No. 6 on the Mary Decker, same section. The Ridge Oil & Gas Syndicate of Dayton, Ohio, is reported shut down at a depth of 1,492 feet at No. 4 on the C. S. Chambers farm, Section 35, Biglick Township, same county.

Another nice producer has been added to the new development northeast of Lima, in Bath Township, Allen County, where George A. Helmkamp, agent, found a 35-bbl. producer at No. 5 on the C. G. Vore farm, Section 12. In this same township, the Ohio Oil Co. abandoned Nos. 2 and 5 Wollett heirs farm, and No. 1 on the J. T. Miller, both in Section 27. George R. Fetter's No. 2 has abandoned Nos. 1, 2 and 3 J. E. Fetter; Nos. 3 and 4 Daniel E. Fetter and Nos. 1 and 2 Fetter & Son farm, all in Section 23; also Nos. 1 and 3 on the Jacob Staner farm, Section 26. In Shawnee Township, same county, Willis Shaffer pulled out Nos. 3, 5 and 9 on the William Hixenbaugh farm, Section 3. In Perry Township, the Ohio Oil Co. abandoned No. 12 B. C. Faurot "A" farm, and No. 2 John Martin farm, both in Section 29.

In Auglaize County, Logan Township, John Fox and others' test, 660 feet from the north line and 250 from the east line of the John Howisher, in the northeast quarter of Section 27, struck top of Trenton sand at 1,202 feet and got a dose of salt water at 33 feet in the sand and it was abandoned as dry. The Farmers Oil Co. is starting a wildcat well on the George Huedepohl 74 acres, in the west half of the southwest quarter of Section 18, Pusheta Township, and close to 5 miles south and a little west of Wapakonetta and nearly 4 miles direct west of the hamlet of Freyburg. Wesley Sprague is getting ready to start his No. 8 on the Charles Fritz farm, a couple of miles northeast of Glynwood, in Section 16, Moulton Township, same county, in the edge of the old development of the one-time rich Glynwood Pool.

The Lindy Oil Co, named after the famous aviator, is drilling No. 3 on the John E. Boyer farm, Section 11, Washington Township, Sandusky County, it being the only drilling well in the county at this time.

In Ridge Township, Van Wert County, T. G. Ayres abandoned No. 5 N. Poling farm and No. 1 John A. Tomlinson farm, Section 21.

In the Tiffin Field, Clinton Township, Seneca County, Geyer & Shaul are drilling No. 2 on the Charles Shaul, Section 18. In Liberty Township, J. H. Murphy & Son are drilling No. 3 on the David Hunker, Section 21, and the Wiser Oil Co. is working at No. 1 on the Joseph Kimmitt farm, same township.

In Mississinewa Township, Darke County, J. G. Hoffman is drilling No. 2 George Lawrence farm, Section 16.

In the Paulding County Field, Benton Township, John H. Koeing abandoned Nos. 1 and 2 on the W. D. Ryle and No. 1 on the Conrad Yearling, all in Section 4.

Indiana

Quietude prevails in all areas of Indiana at this time. In the old Trenton Rock area of the state in Penn Township, Jay County, Say and others drilled a dry hole in a test on the H. Heller farm, Section 27. In Bear Creek Township, Spencer & Pontius abandoned No. 2 on the L. L. Jelleff, Section 24.

In Wabash Township, Adams County, Daugherty & Passmore abandoned No. 6 J. H. Barr, Section 28, and Spencer & Pontius did the same with Nos. 1 and 2 on the D. Studebaker, Section 29.

F. E. Reckow is drilling a wildcat on the H. Miller, Section 20, Stony Creek Township, Randolph County.

In southwestern Indiana in Madison Township, Pike County, the Ohio Oil Co.'s No. 10 well, 660 feet from the south and east lines of the N. B. Coffman,

Section 26, is a duster at a depth of 970 feet.

The Home Oil Co.'s test, 225 feet from the north and east lines of the Emrick farm, in the northeast quarter of Section 16, Veale Township, Daviess County, is a dry hole at 1,650 feet.

Illinois

Results of the drill in Illinois during the week was not very encouraging as there were three dry holes out of four completions and the one well is good for only 1 bbl. In Montgomery Township, Crawford County, John Phipps' test, 200 feet from the south line and 325 feet from the west line of the J. D. Eaville farm, in the northwest quarter of Section 32, pumped but 1 bbl. the first 24 hours, from a depth of 954 feet. In Oblong Township, same county, the Dinsmoor Oil Co.'s No. 10 well, 660 feet from the north and east lines of the F. L. Dewey farm, in the SE SE, Section 16, came in a dry hole and the hole will be utilized as a pressure well, in hopes of increasing the other producers on the lease. In Prairie Township, same county, C. C. Watson is starting No. 10 on the A. E. Joseph, Section 23, and the Porterville Oil Co. is starting a test on the W. E. Evans, Section 25.

In Wabash Township, Wabash County, Karns and others' test in the northeast corner of the V. Jordan farm, in the SW of Section 2, is now reported a dry hole. The Breen Oil Co. is reported to have one of the same kind in No. 1 well, 200 feet from the south line and 175 feet from the west line of the L. G. Stillwell farm, in the NE of Section 2, close to some of the big producers drilled the past three years in the Allendale Field. No. 2 is starting up about 75 feet away from the dry hole.

Central Ohio

The Cleveland Field of Cuyahoga County is the most active of the various fields in the central Ohio area, and while a small oil well or dry hole is occasionally found, some of the best gas wells in the state are being uncovered in the Newburg sand which lies above the Clinton formation, which is the real source of the gas production in that part of Ohio. In Olmstead Township of Cuyahoga County, Arthur & Simpson's test in the southwest corner of the J. E. Crawford 3 acres, Lot 31, is above the average gas producer. J. B. Harrison and others have a nice gas well at a second test on the R. Beranek one acre, Lot 31. This well is 75 feet from the south line of the lot and 175 feet west of the highway. Same company is drilling No. 1 in the southwest corner of the Schuman three-quarter acre, Lot 30, and No. 1 on the W. D. Camp 9 acres, Lot 30, and is 75 feet west of road and 75 feet north of the road. Hulse & Kundtz secured a very good gas well at a second well 325 feet south of the road and 175 feet from the east line of the M. Standen 73 acres, Lot 29. This firm is drilling a second test, 1,150 feet from the south line and 200 feet from the east line of the L. M. Amos 29 acres, Lot 28, and drilling a test in the southwest corner of the N. J. Paddock property, Lot 30. John Arthur is drilling a test 400 feet from the west line of the A. W. Hurd 10 acres, Lot 29, and also located 75 feet south of the road. The Ohio Public Service Co. drilled in a very nice gas well in a second attempt on the R. S. Ashley property, Lot 32, Strongville Township, same county. In Dover Township, same county, John Arthur is drilling a test on the A. E. Gauge one acre. The location is 50 feet from the east line of the acre tract and 80 feet south of the road. Same party is drilling a test 1,200 feet from the north line and 275 feet from the east line of the J. B. Harrison 30 acres, Lot 7, same township.

The Upham Gas Co. drilled a dry hole at a test 240 feet from the north line and 1,050 feet from the east line of the M. H. Adrian 160 acres, Section 19. Jefferson Township, Knox County. In Brown Township, Ohio Fuel Gas Co. is starting a second well 660 feet from the east line of the George R. and Annan M. Sira, Section 6. The well is 500 feet south of the road.

A test well came in dry, drilled by the Logan Gas Co., 600 feet from the north line and 516 feet from the east line of the S. L. Markel 50 acres, Lot 1, Troy Township, Ashland County. In Clear Creek Township, the Kemrow company is getting ready to start a test 450 feet west of the road and 450 feet from the north line of the Hulda Shaw 115 acres, Lot 13, and Brown, Shriver and others are drilling a test on the R. P. Henderson 10 acres, Lot 11. The well is 750 feet west of the road and 100 feet south of the road. The Logan Gas Co. is drilling No. 1 well, 660 feet from the south line and 950 feet from the east line of the Martin Trumpower 112 acres, Lot 32, Green Township. The Logan Gas Co. made a location for a test 660 feet from the south and east lines of the Samuel Hay 80 acres, Lot 29.

Ohio Fuel Gas Co. made the location for a test 1,300 feet from the north line and midway between the east and west lines of the Edward J. Bauer 37 acres, Lot 1, Liverpool Township, Medina County. In Hinckley Township, same company is starting a test 800 feet from the north and east lines of the John Austin Realty Co., Lot 43.

Ohio Fuel Gas Co. landed a nice gas well at a test on the F. G. Howard farm, Columbia Township, Lorain County. Empire Gas & Fuel Co. is drilling No. 1 on the G. and M. Brooks farm, Lot 15.

In Chester Township, Wayne County, B. B. Cameron's test, 550 feet from the south and west lines of the R. C. McFadden 36 acres, Section 8, is a good gas well. The Logan Gas Co. is drilling a test on the Godfrey F. Martin 130 acres, Section 5. Ohio Fuel Gas Co. is starting a test 900 feet from the south line and 300 feet from the east line of the H. W. Gaul 61 acres, Section 34. Same company is starting a test 1,320 feet from the north and west lines of the P. R. Ferguson 160 acres, Section 15, Congress Township.

Empire Gas & Fuel Co. is shut down at a depth of 3,990 feet at a test near the Grandville Treaty line and on the Adam Karsch 101 acres, Lot 7, Salt Creek Township, Holmes County, and 525 feet from the north line of the lease. In Richland Township, the East Ohio Gas Co. is drilling No. 1 on the Richard Roby 40 acres, Lot 14, and the Logan Gas Co. is drilling a test near the northeast corner of the farm, known as the John Mullet 105 acres, Lot 24, same township.

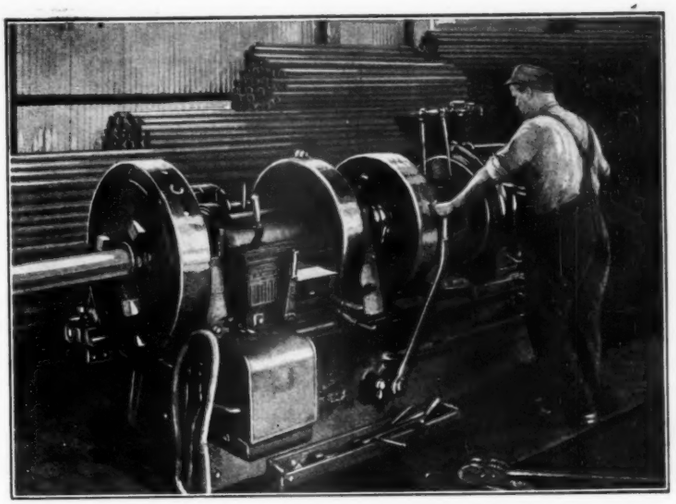
Michigan

No section of Michigan reported any completions for the week and work has slacked down to only a couple of wells under way in the Saginaw Field and a few wildcats, most of which have been shut down, scattered over a number of other counties in the state.

The finding of the well near Muskegon along the east shore of Lake Michigan and in the western part of the Wolverine state, has brought much attention to that area as the well is reported doing around 20 bbls. daily, flowing its oil which is loaded in tank cars and shipped to a Chicago refinery. Much leasing has been done during the past week or so and that means that wells will be drilled and some are expecting to see a field similar to that at Saginaw to be opened up. If this test develops a new pool it will no doubt run in a northeast and southwest direction, running over into the western portion of Indiana, thence down through the western part of the Hoosier state or along the east side of Illinois.

ENTERS CENTRAL OHIO

COLUMBUS, Ohio, Jan. 2.—The Roxana Petroleum Corp. of Delaware has acquired a site for a filling station and will build in the near future. This will be the first Roxana station to be built in the Columbus territory and is a part of the extensive expansion program being followed out by that company. It is also understood a number of options have been secured in and around Columbus for additional stations.



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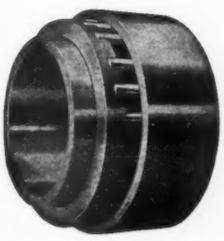

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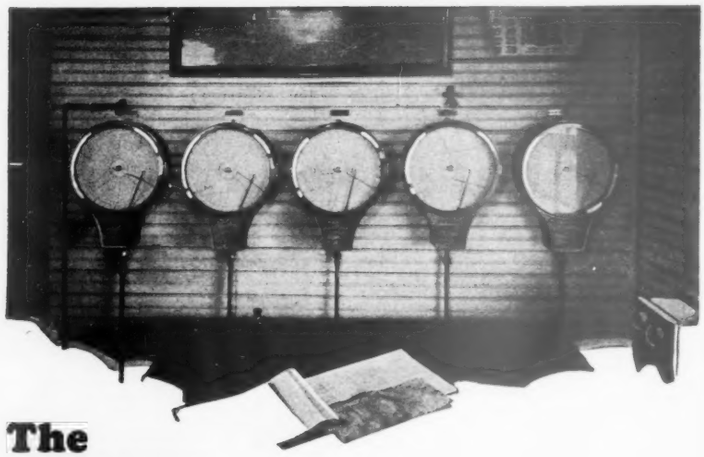

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PIPE MANUFACTURE INSPECTION METHODS

(Continued from Page 152)

readings. It is evident that a plus taper will allow the second plug to screw down closer to the first one and this variation is read on graduations engraved on the handles of the two plugs. A minus taper, of course, causes the two plugs to stand farther apart.

Size is important, of course, but not nearly to the extent that taper is. Poor size can be observed in the field, as soon as the joints are being made up, whereas poor taper often doesn't show up until galling has developed or a string has been dropped in a hole. In other words, an operator can depend upon his own field superintendent for the accuracy of coupling or pipe size but he must have blind faith in his pipe manufacturer's inspectors for taper. For this reason the mill, whose methods the writer is describing, is not content with merely keeping inside the A.P.I. limits but they keep well within them so that even a mistake on the part of an inspector will still be within the published tolerance. This is most particularly true on taper but also on size, alignment and dimensions of the pipe itself.

Checking Pipe Thread Size

Figure 3 shows how pipe thread size is checked. The size coupling which the inspector is screwing on has been selected with a perfect taper and size and is only used for one day's work on account of wear. The next morning a new coupling is selected, being checked against a standard plug which in turn has been checked against a standard ring gauge. These latter are also checked, at intervals, with certified A.P.I. gauges which are handled as carefully as possible and guarded like government gold.

For coupling size a working size-nipple is fastened in a vase as shown in Figure 4. It, too, is used for one day only on

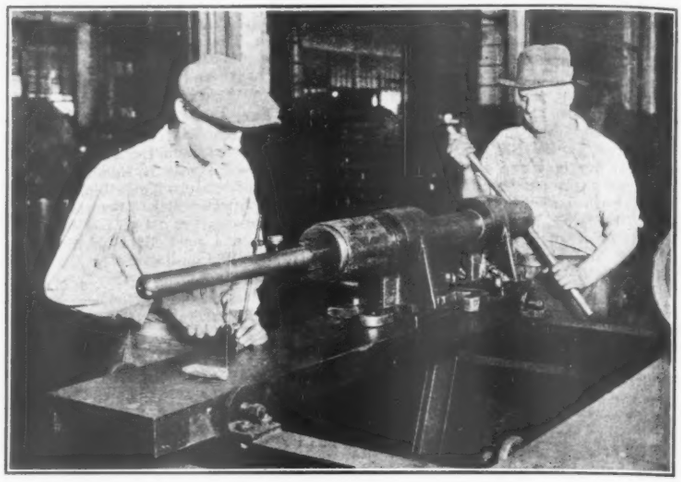

Fig. 5—Checking couplings for alignment.

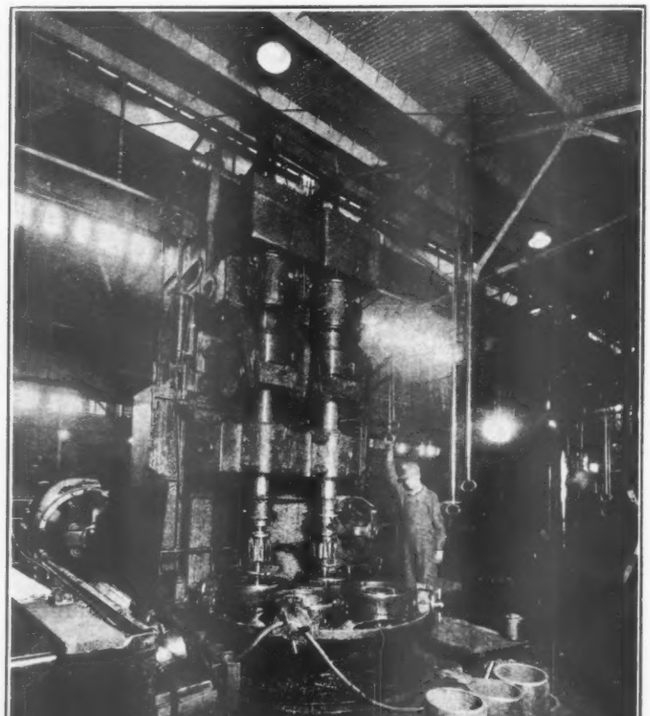

Fig. 6—Special tapping machine developed to insure the accuracy demanded in A.P.I. material.

account of wear. As the inspector is always working close to the threading machine operator any variation in pipe or coupling size is reported immediately and a resetting of the dies can be made long before the tolerance limits have been reached.

Figure 5 illustrates an alignment check for couplings. The coupling is screwed onto a revolving spindle and into its outer end is screwed a lathe turned piece on which a dial indicator is held. As the coupling revolves any variation from true alignment is indicated by the degree of wobbling of the turned mandrel. Readings are taken a foot apart on the mandrel and the out of alignment per 20 feet is calculated.

To keep well within the three-quarter inch alignment per 20 feet (one-half inch

Fig. 7—Drifting A.P.I. pipe to insure free passage of next string of pipe.

on drill pipe) allowed by the A.P.I. this mill has installed the specially designed tapping machines shown in Figure 6. Here it is quite evident that the tapping spindles and holding jigs have been made exceptionally heavy to eliminate chattering and to insure accuracy. The right hand spindle bores and recesses one end of the blanks and the left hand spindle taps. The blanks are then turned over in their jigs for finishing the other end.

Figure 7 shows the drift mandrel which is put through every length of casing and tubing.

TEXT OF AMENDMENT BY PRESIDENT CALLES

(Continued from Page 76)

Branch, could not lapse for the Mexican Petroleum Co. of California and for others which were later granted amparo, its is extensive to all manner of rights, even to those which are restricted by the final paragraph of Item 2 of Article 14 of the law, since, otherwise, those persons would be in a condition in fact and in right which is irregular and contrary to the unity and uniformity which should exist in the application of the laws.

Whereas, the sentence of the Supreme Court which is under consideration and those which it may in future pass, would create an abnormal situation by placing the companies or individuals receiving amparo outside the limits of an established legal regime.

Whereas, under these circumstances, the federal executive, who at all times had been making every effort to give to the law of December 26, 1925, within a spirit of deliberation and justice, its most exact application, finds himself, in the face of the decision of the Supreme Court, impossibilitated from carrying out the uniform application of said law; wherefore, within the extent of his powers, he should procure a solution of the conflict which has arisen between a law now in effect and the interpretation of its unconstitutionality. And,

Whereas, the effects which may be determined by the opinion of November 17, 1927, and those which may follow it, should benefit not only those who have placed themselves strictly within its scope but also those who complied with Articles 14 and 15, the amendment of which is proposed, since otherwise there would be produced an unequal material and juridical state, and unjust in addition, in so far as the confirmation of rights is concerned.

The federal executive, in the use of the power granted him by Item 1 of Article 71, of the political constitution of the Mexican United States, moved before the Honorable Congress of the Union, the amendment of Articles 14 and 15 of the Reglamentary Law of Article 27 of the Constitution of the Petroleum Branch, of December 26, 1925, in the following terms:

Article 14. The following rights shall be confirmed without cost whatever and through the issue of concessions:

1. Those which derive from lands on which petroleum exploration work shall have been started prior to May 1, 1917;

2. Those which derive from contracts celebrated prior to May 1, 1917 by the owner of the surface or his heirs or assignees, with the express purpose of petroleum exploitation;

The confirmation of these rights shall be made without time limit when they are to be made in favor of owners of the surface; and for the duration stipulated in the contracts, when it is a matter of rights derived from contracts celebrated with the owner of the surface or his heirs or assignees.

3. To pipe lines and refineries which are now working by virtue of concession or authorization issued by the Department of Industry, Commerce and Labor and in so far as refers to said concessions or authorizations.

Article 15. A period of one year is established, which shall be computed from the day following the publication of these amendments to the same day, inclusive, of the following year, for the filing of requests for the confirmation of the rights referred to in the foregoing article and which have not been the object of requests for confirmatory concessions within the period originally established in this article.

Transitory Article

The confirmation asked for in the year, 1926, and on which the respective titles have not been issued, shall be issued, should it be precedent, in accord with these amendment. The confirmatory titles already issued shall be rectified, in such cases, as to the terms of the same.

Palace of the Executive Power of the Union, Mexico; the President of the Republic: P. Elias Calles.

The original text of the two articles was as follows:

Article 14. The following rights shall be confirmed without cost whatever and through concessions issued in accord with this law:

1. Those which derive from lands on which petroleum exploitation work shall have been started prior to May 1, 1917;

2. Those which derive from contracts prior to May 1, 1917, with the owner of the surface or his heirs or assignees, with express purpose of petroleum exploitation;

The confirmation of these rights shall not be authorized for more than 50 years, counting, in the case of Clause 1, from when the work of exploitation began and in the case of Clause 2, from the date of the celebration of the contracts; and

3. To pipe lines and refineries which are working at the present time by virtue of concession or authorization granted by the Department of Industry, Commerce and Labor and in so far as refers to the said concessions or authorizations.

Article 15. The confirmation of the rights referred to in Articles 12 and 14 of this law shall be requested within the period of one year, counting from the date this law goes into effect; this period having lapsed, these rights shall be considered as having been renounced and they shall have no effect whatever against the Federal Government, those rights whose confirmation has not been requested.

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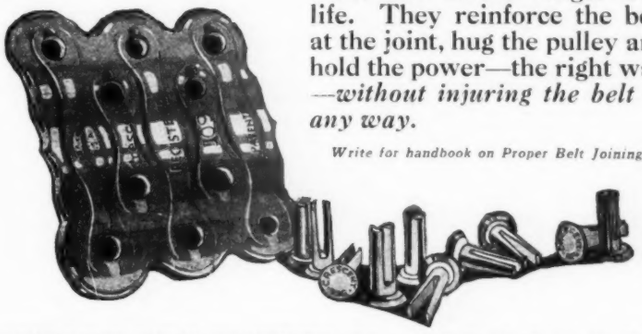

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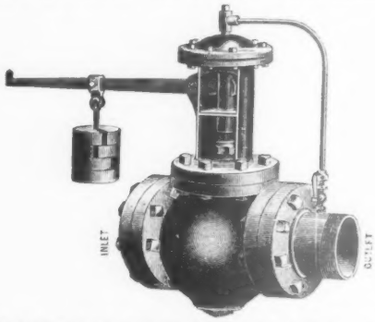

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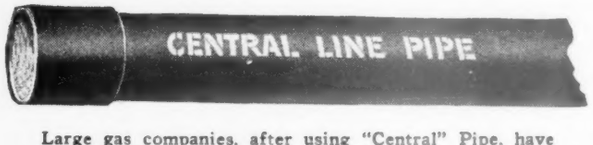

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EASTERN FIELDS

(Continued from Page 56)

in the same formation. In Sheridan district Godfrey L. Cabot has a gasser in the Big Injun sand at No. 4 on the A. Garrison farm. In the same district, W. H. Bickle has shut down at 1,900 feet at No. 4 on the James S. Wolover farm.

Pleasants County

On Willow Island Run, McKim district, Pleasants County, the South Penn Oil Co. has completed a very light pumper in the Big Injun sand at No. 17 on the D. W. and I. O. Reynolds farm. In Sherman district, Calhoun County, the McCall Drilling Co. has a duster in the Big Injun sand at a test on the John Kelly farm.

Clay County

In Union district, Clay County, A. J. Womock & Co. have completed and shot in the Big Injun sand No. 4 on the J. B. Salsberry farm. It is a gasser good for 600,000 feet. In the same district, the South Penn Oil Co. has the rig completed for a test on the J. C. Mukkins farm.

Mingo County

At the headwaters of Turkey Creek, Harvey district, Mingo County, the Public Gas Corp. has completed in the Maxon sand No. 18 on the Henry Closterman estate. It is a gasser good for 1,000,000 feet. In Union district, Ritchie County, C. W. McCall and others have completed a test on the C. S. Pearcy farm. It is a duster in the Berea grit.

Southeast Ohio

In the SW of Section 5, Jackson Township, Guernsey County, Ohio, Mack Smith & Co. have completed in the Niagara lime No. 6 on the Andrew Slabie farm. It produced 50 bbls. the first 24 hours after drilled into the pay.

In the NW of Section 17, Richland Township, Holmes County, the Kemrow Co.'s test on the John Mullen farm is a gasser in the Clinton sand good for 3,000,000 feet. In Salisbury Township, in the west end of Subsection 23, Meigs County, the Coal Hollow Oil & Gas Co.'s No. 5 on the R. T. and R. H. Burnette farm is a light gasser in the Macksburg 500-foot sand.

In the SW of Section 21, Westland Township, Guernsey County, the Pure Oil Co. has completed in the Niagara lime No. 3 on the D. D. Ridgley farm. It is a natural producer good for 40 bbls. a day.

In the SW of Section 24, Ward Township, Hocking County, the Kachemacher estate has completed No. 27 on the James J. Tracy estate. The first 24 hours after shot in the Clinton sand it produced 10 bbls.

In Section 1, Franklin Township, Monroe County, Shay & McMullin have a very light pumper in the Berea grit at No. 3 on the P. S. Stoffle farm. In Monroe Township, Holmes County, the East Ohio Gas Co.'s test on the S. R. Williams and William Martin farms are gassers in the Clinton sand. In Section 19, Knox Township, the Ohio Fuel Supply Co.'s test on the David Moser farm is a duster. In Section 16, the East Ohio Gas Co.'s test on the J. O. Strong farm, O. Hall & Co.'s test on the Walter Scott farm and the Arkansas Fuel Oil Co.'s test on the C. D. Kaylor farm are all gassers.

In Section 14, Licking Township, Licking County, O. W. Zink and others have a very light pumper in the Berea grit at a second test on the Charles Schott farm. In the NE of Section 29, Harrison Township, Perry County, the Pure Oil Co.'s test on the C. Mooney farm produced 39 bbls. the first 24 hours after shot in the Clinton sand.

Late Completions

In Mannington district, Marion County, West Virginia, Laughlin & Monroe have completed a test on the J. W. Tennant farm. It is a gasser in the Gordon sand. On Robinson Run, Pawpaw district, the Hope Natural Gas Co. has started to drill down old No. 1 on the James Eddy farm. It was formerly a gasser.

In Henry district, Clay County, the South Penn Oil Co. has completed in the Big Injun sand No. 64 on the O. D. Stockly farm. It is good for 20 bbls. a day. The location is 550 feet northwest of No. 63. In Lee district, Calhoun County, Godfrey L. Cabot's test on the Leona M. Nicholson farm has a show of oil and gas in the Big Injun sand.

In Otter district, Braxton County, C. F. Engle has completed in the Maxon sand No. 3 on the D. S. and C. F. Engle farm. It is a gasser in the formation named. In Center district, Gilmer County, the Carnegie Natural Gas Co.'s second test on the Lloyd Westfall is a gasser in the Maxon sand.

Cabell and Boone Counties

In Barboursville district, Cabell County, Ortman & Shipe have a gasser in the Big Injun sand at a test on the William Robertson farm. In Scott district, Boone County, the Hope Construction & Refining Co. has a gasser in the same formation at a test on the M. F. Moore farm.

On Dry Ridge, Grant district, Ritchie County, J. G. Carter has drilled a test on the S. Tennant farm through the Big Injun sand and is a duster. On the Kanawha River, Center district, Calhoun County, the Hope Construction & Refining Co. has completed in the Big Injun sand a second test on the A. Hardman farm. It is a gasser good for 1,000,000 feet.

At the head waters of Green Creek, Walton district, Roane County, the Clifton Oil & Gas Co. has completed in the Big Injun sand a second test on the G. A. Cummins farm. It is good for 3 bbls. a day and 200,000 feet of gas. In Coal district, Harrison County, in the west end of Clarksburg, the Camden Gas Co. has started to drill from the fifth to the Speechley sand its old gasser on its own property.

In Lincoln County, Union district, the Columbia Gas & Electric Co. has a gasser on the S. W. Oxley farm. In Duval district, J. U. Rashman has a gasser in the B. G. Beheler farm. In Jefferson district, the Mud River Gas Co. completed a gasser on the E. Adkins farm. In Carroll district, L. R. Sweetland has a light gasser at No. 26 on his own farm. All are producing from the Berea grit.

Starting Test Wells

In Sherman district, Calhoun County, the Hope Natural Gas Co. has started to drill a test on the Creed Yoak farm. In Lee district, the same company is rigging up on the John Slider farm. In Center district, the same company is building a rig on the Allen Hardman farm.

In Center district, Gilmer County, the Hope Refining & Construction Co. is rigging up on the Nannie Ball farm. In Sherman district, Calhoun County, the United Carbon Co. is rigging up on the Jemima B. Smith farm. In Otter district, Braxton County, J. F. Pauley and others have started to drill on the Henry Clowser farm.

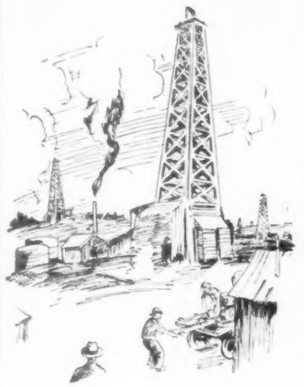
In Center district, Calhoun County, Gerwig & Co. are due in the Keener sand on the M. Hardman farm. In Sherman district, the Sycamore Fuel Co. has started to drill on the L. E. Trippett farm. In the same district, C. B. Lewis & Co. are building a rig on the Spencer White farm.

In Sherman district, Calhoun County, the Sycamore Fuel Co. has started to drill on the L. H. Trippett farm. In the same district, C. B. Lewis is building a rig on the Spencer White farm. In Lee district, the United Carbon Co. has started to drill on the J. B. Smith farm. In the same district, the same company has made a location on the D. C. Craddock farm.

In Magnolia district, Doddridge County, McIntyre Brothers are due in the sand on the James Baker farm. In Grant district, Cabell County, the Harshbarger Oil & Gas Co. has started to drill on the Addison Conner farm. In the same district, the United Carbon Co. has started to drill on the N. C. Bliss farm.

Ritchie County Tests

In Murphy district, Ritchie County, L. W. Cunningham has the rig completed for a test on the G. W. Haines farm. In the same district, the Hope Natural



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Gas Co. is rigging up on the N. W. Lawrence farm. In Grant district, the Del Rio Oil Co. is building a rig on the Cornelia Storrs farm.

In Freeman Creek district, Lewis County, the Moran Drilling Co. is rigging up on the M. Griggs farm. In Mannington district, Marion County, Monroe & Laughlin are fishing at 3,200 feet on the J. W. Tennant farm. In the same district, F. W. Bartlett has rigged up on the John Haddix farm. In Ravenwood district, Jackson County, M. H. H. Herman has rigged up on the Keene Hutchinson farm. In Reedy district, Roane County, the Heck Oil Co. has started to drill No. 11 on the J. W. Conley farm and the location made for No. 12.

Southeast Ohio Tests

In Section 24, Perry Township, Licking County, Ohio, the Hope Construction & Refining Co. has drilled its test on the E. H. McKnight farm through the Clinton sand. The well produced 25 bbls. the first 24 hours after shot. In Section 235, same township, the same company has completed a test on the Henry Osborne farm. After shot in the same formation it produced 20 bbls. the first 24 hours.

In Wheeling Township, Belmont County, the Dysert Oil Co.'s second test on the Craig Seibert farm is a 4-bbl. pumper in the Berea grit. In Lot 17, Harrison Township, Perry County, W. W. and A. T. Wehrle have a duster at a test on the Lucy Teal farm. In Section 19, same township, David L. Melick, trustee, has a duster in the Clinton sand at a test on the George W. Spring farm. In Section 20, Scell & Larrimer are due in the Clinton sand at a test on the Maxwell heirs' farm. The following rigs have been completed for tests in Section 21: Valley Refining Co., J. R. Springer, Twin City Oil & Gas Co., Ashbury Garhnger, Fairview Oil & Gas Co., L. Gregg and Rodgers heirs on their own farm.

Southwest Pennsylvania

Two and one-half miles west of Nineveh, Greene County, Nuss & McClay have drilled a test on the Clyde Ray farm into the Nineveh 30-foot sand and the hole filled up 1,000 feet with fluid. This location is some distance in advance of production.

BRITISH PARLIAMENT INTEREST IN IRAK

An interesting discussion regarding the Turkish Petroleum Co. took place in the British House of Commons following the completion of the gusher well in Irak.

Viscount Sandon asked the Under Secretary of State for the Colonies whether he is aware that only 25 per cent of the capital for working the newly discovered Mosul oil fields will be British; and whether the government will be willing for the conthrol to pass out of British hands?

Mr. Ormsby-Gore: The composition of the Turkish Petroleum Co. has already been made public. The convention between the company and the Iraq government provides that the company shall be and remain a British company registered in Great Britain and having its principal place of business within His Majesty's Dominions, and that the chairman shall at all times be a British subject.

Colonel Wedgwood: May we take it from that, that, if a pipe line is laid to the Mediterranean, that pipe line will debouch on British territory at Haifa?

Mr. Ormsby-Gore: That does not arise from the question on the paper.

Colonel Wedgwood: If it is a British company, does not mean that the British government can control the policy of that company?

Mr. Ormsby-Gore: The right honorable gentleman is aware that that it is a matter for the company primarily, and depends on what shares are held and the different proportions. I could not possibly give an answer to the question without very careful consideration.

Colonel Wedgwood: Is the British government to have any control over this company similar to the control of the British government over the Anglo-Persian Oil Co., and will the British govern-

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ment ultimately decide questions of policy?

Mr. Ormsby-Gore: No, the position in regard to the Turkish Petroleum Co. is wholly different from that of the Anglo-Persian company. In the case of the Anglo-Persian company, the British government has a share-controlling interest; in the Turkish Petroleum Co. the British government has no such share-controlling interest.

Mr. Harris: Do the powers of a mandate given to the British government under the League of Nations give our government the right to insist that British trading companies shall be British controlled or is it brought about by pressure?

Mr. Ormsby-Gore: No. I do not think that question has ever arisen at Geneva. It is entirely a question of the composition of a concessionaire, the concessionaire being the Turkish Petroleum Co. Certain former shares in that company were held, I think, by the Deutsche Bank, and the matter is a question as to how those shares are distributed. They are distributed among many nations, partly to the United States—to the American group—partly to a French group, partly to Mr. Gulbenkian, partly to the Royal Dutch-Shell, and partly to the Anglo-Persian company.

ALBERTA GEOLOGISTS FORM ASSOCIATION

CHATHAM, Ontario, Dec. 31.—At a meeting at Calgary the Alberta Association of Petroleum Geologists was organized with a membership of 23 chiefly from Calgary and Edmonton. The membership qualifications are similar to those of the American Association of Petroleum Geology. It is planned to hold monthly meetings at Calgary or Edmonton to discuss professional problems.

The officers elected were as follows: President, S. E. Slipper, chief geologist of the Canadian Western Natural Gas, Light, Heat & Power Co., Calgary; vice president, Dr. J. A. Allan, professor of geology, University of Alberta; secretary-treasurer, Dr. T. A. Link, geologist, Imperial Oil, Ltd.; business representative, E. V. Whitwell, of the Hudson's Bay-Mar'and Oil Co.

Those present at the organization meeting also included T. G. Madgwick, Dominion government petroleum geologist at Calgary; Dr. P. D. Moore of Imperial Oil, Ltd.; R. V. Johnson, S. J. Davies and Dr. T. B. Williams, consulting geologists; H. M. Hunter of the Canadian Western Natural Gas Co.; Robert McNeely, of the Hudson's Bay-Marland staff at Edmonton, and J. Howells, lecturer in geology at the Calgary Institute of Technology.

INDUSTRIAL RESEARCH GROWS

About $200,000,000 annually is being spent in the United States for industrial research by industrial corporations and by the Federal government, with industry spending $2 for every one spent by the Government; according to the National Industrial Conference Board. Whereas in 1921 only 578 companies were known to maintain research departments or laboratories, more than 1,000 now have organized research divisions in operation. In addition, 70 trade associations are spending about $15,000,000 a year in research, and 152 colleges and technical schools about $1,500,000. There is also much technical research work being carried on in connection with industrial production.

TEXAS, LOUISIANA AND ARKANSAS STOCKS

HOUSTON, Tex., Dec. 31.—Due mostly to the West Texas situation and to a piling up of oil at refinery tank farms and terminals along the Gulf Coast, crude stocks in Texas, Louisiana, and Arkansas, as a district, increased 2,187,981 bbls. during November, according to figures just compiled here. Storage on

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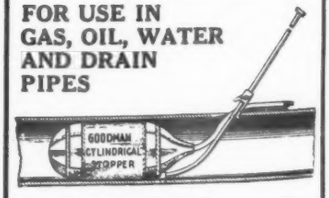

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December 1 totaled 109,091,389 bbls., as against 106,912,436 bbls. on November 1.

Increases in storage, however, were shown in all districts except the Gulf Coast and Southwest Texas fields, and North Louisiana. The principal drop in the latter fields was in earthen storage. Production in Gulf Coast fields, and also in North Louisiana, has not been sufficient to meet demands, and stocks which are accumulating at Gulf Coast terminals are due to oil piped in from West Texas or other Mid-Continent fields.

Stocks by fields in Texas, Louisiana, and Arkansas on December 1 were:

TEXAS

Northern district—	Barrels Steel	Barrels Earthen
North Central Texas, including Eastland-Stephens Counties	13,627,612	.....
Powell	2,355,292	.....
Mexia district	8,576,398	.....
Panhandle	17,755,261	.....
West Texas	11,636,254	.....
Total Dec. 1	53,950,817	.....
Total Nov. 1	52,380,495	.....
Increase	1,570,322	.....
Gulf Coast and Southwest—		
Boling	29,516	.....
Batson	4,240	.....
Big Creek	68,400	.....
Damon Mound	7,120	.....
Dayton	42,500	.....
Barbers Hill	3,500	.....
Goose Creek	148,867	155,518
Hull	315,067	.....
Humble	1,180,083	1,140,057
Lockhart (Lytton Springs)	6,200	.....
Luling	429,699	.....
Liberty	38,290	.....
Markham	15,511	.....
Orange	237,822	.....
Pierce Junction	60,314	.....
Saratoga	220,887	.....
Spindletop	5,218,943	175,000
Sour Lake	1,506,341	740,645
West Columbia	1,279,776	964,127
Laredo	1,541,408	.....
Total Dec. 1	12,354,484	3,175,347
Total Nov. 1	12,627,624	3,633,330
Decrease	273,140	457,983
Miscellaneous (refinery tank farms and terminals)—		
Englewood	1,234,351	.....
Norsworthy	545,650	.....
Sinco	833,661	.....
Webster	1,622,404	.....
Texas City	3,399,500	.....
Lynchburg	33,000	.....
Baytown	2,327,990	.....
Pasadena	183,812	.....
Crosby	35,095	.....
Almeda	84,390	.....
Total Dec. 1	10,299,853	.....
Total Nov. 1	8,846,409	.....
Increase	1,453,444	.....
Total Texas, Dec. 1	76,605,154	3,175,347
Total Texas Nov. 1	73,854,528	3,633,330
Difference	2,750,626	457,983

LOUISIANA

Northern district—	Barrels Steel	Barrels Earthen
Shreveport district	3,938,909	.....
De Soto	959,937	.....
Bull Bayou-Crichton	33,858	.....
Urania	99,885	.....
Cotton Valley	281,696	.....
Homer	3,108,000	.....
Haynesville	4,360,027	.....
Bellevue	220,129	.....
Total Dec. 1	13,002,441	.....
Total Nov. 1	13,201,751	.....
Decrease	199,310	.....
Gulf Coast—		
Edgerly	10,500	.....
Evangeline	64,800	.....
Vinton	295,284	.....
Lockport	674,846	.....
Total Dec. 1	1,045,430	.....
Total Nov. 1	959,380	.....
Increase	86,050	.....
Total Louisiana Dec. 1	14,047,441	.....
Total Louisiana Nov. 1	14,161,131	.....
Decrease	113,690	.....

ARKANSAS

	Barrels Steel	Barrels Earthen
El Dorado	2,028,146	.....
Smackover	13,013,368	.....
Nevada County	234,961	.....
Total Dec. 1	15,276,475	.....
Total Nov. 1	15,263,447	.....
Increase	13,028	.....

SUMMARY

	Barrels Dec. 1	Barrels Nov. 1
North and West Texas	53,950,817	52,380,495
Coastal and Southwest:		
Steel	12,354,484	12,627,624
Earthen	3,175,347	3,633,330
Miscellaneous—Texas	10,299,853	8,846,409
Louisiana	14,047,441	14,161,131
Arkansas	15,276,475	15,263,447
Total	109,104,417	106,912,436
Increase	2,187,981	.....

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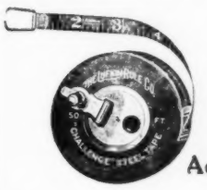

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PRODUCTION GAINS IN THREE STATES

(Continued from Page 106)

Prairie	2,861	84,030
Eastern Bristow or Slick	5,310	159,300
Total	51,123	1,533,690
Pawnee County—		
Cleveland	2,873	86,190
Keystone	2,480	74,400
Jennings	3,109	93,270
Otoe or Watchorn	1,122	33,660
Maskam	30	900
Ralston	142	4,260
Total	9,756	292,680
Payne County—		
Yale, Quay and Ingalls	5,014	150,420
N. Cushing or March Pool	3,749	112,470
Deep Rock (23-18-3)	3,175	95,250
Total	11,938	358,140
Lincoln County—		
Stroud	1,217	36,510
Davenport	2,756	82,680
Kendrick	533	15,990
Total	4,506	135,180
Kay, Grant and Noble Counties—		
Blackwell	1,120	33,600
Otstot	1,024	30,720
Vernon	670	20,100
Deer Creek	1,524	45,720
Ponca City	683	20,490
Mervine	271	8,130
North Braman	1,826	54,780
South Braman	3,387	101,610
Hubbard	2,698	80,940
Thomas	2,105	63,150
Tonkawa	15,314	459,420
Billings	253	7,590
Miscellaneous	1,108	33,240
Total	31,983	959,490
Garfield County—		
Garber	10,851	325,530
Logan County—		
Marshall	2,318	69,540
Carter County—		
Healdton	14,442	433,260
Hewitt	9,229	276,870
Graham	4,748	142,440
Fox	2,784	83,520
Brock	951	28,530
Tussy or Scholem Alechem	12,475	374,250
Total	44,629	1,338,870
Stephens-Cotton Counties—		
Loco-Milroy	2,231	66,930
Comanche	715	21,450
Duncan	5,690	170,700
Walters	970	29,100
Kilgore	196	5,880
Total	9,802	294,060
Jefferson County—		
Hambro	1,711	51,330
Caddo County—		
Cement	2,047	61,410
Garvin County—		
Robberson	2,352	70,560
Grady County—		
Knox	7,124	213,720
Beckham County—		
Sayre	47	1,410
Pontotoc County—		
Allen, Lloyd, Francis	7,332	219,960
Pottawatomie County—		
Pearson	4,302	129,060
Maud	3,101	93,030
Total	7,403	222,090
Marshall County—		
Madill	140	4,200
Total November	769,446	23,083,380
Total October	781,413	24,223,803
Difference	10,967	1,140,423

NORTH AND CENTRAL TEXAS

Daily Average and Total Monthly Production in November.

North Central Texas—		
Burk-urnett	11,717	351,510
Electra	12,796	383,880
Iowa Park K. M. A.	3,477	104,310
Archer County	22,319	669,570
Clay County	541	16,230
Wilbarger	10,417	312,510
Montague County	9,779	293,370
Young County	11,614	348,420
Baylor County	86	2,580
Cooke County	5,292	158,760
Total	88,038	2,641,140
Central Texas—		
Stephens County	7,956	238,680
Eastland County	8,716	261,480
Brown County	16,960	508,800
Callahan County	4,120	123,600
Coleman County	1,045	31,350
Comanche County	154	4,620
Throckmorton County	1,130	33,900
Jack County	1,552	46,560
Palo Pinto County	459	13,770
Shackelford County	5,095	152,850
Erath County	306	9,180
Jones County	1,332	39,960
Total	48,825	1,464,750
West Texas—		
Reagan County	19,275	578,250
Mitchell County	3,338	100,140
Winkler County	26,961	808,830
Howard County	4,215	126,450
Upton-Crane Counties	122,916	3,687,480
Crockett County	2,113	63,390
Glasscock County	28	840
Loving County	66	1,980
Pecos County	40,476	1,214,280
Ector County	19	570
Total	219,407	6,582,210
Panhandle—		
Carson County	7,759	232,770
Hutchinson County	58,163	1,744,890
Moore County	73	2,190
Wheeler	1,229	36,870
Gray	15,699	470,970
Potter	28	840
Total	82,951	2,488,530
East Central Texas—		
Powell	14,231	426,930
Mexia	8,565	256,950
Nigger Creek	1,156	34,680
Cedar Creek	1,019	30,570
Currie	578	17,340
Richland	694	20,820
Wortham	2,306	69,180
Total	28,549	856,470
Total all fields, Nov.	467,770	14,033,100
Total all fields, Oct.	463,386	14,364,966
Difference	4,384	331,866

LOUISIANA—NORTH

Monthly Production for November.

Caddo	17,214	516,420
Homer	4,691	140,730
Haynesville	7,004	210,120
DeSoto-Red River	4,218	126,540
Elm Grove	676	20,280
Bellevue	1,170	35,100
Cotton Valley	5,111	153,330
Urania	9,207	276,210
Pleasant Hill	916	27,480
Total November	50,207	1,506,210
Total October	51,355	1,591,655
Difference	1,148	85,445

ARKANSAS

Monthly Production November.

El Dorado	5,987	179,610
Lisbon	2,744	82,320
Smackover	83,193	2,495,790
Stephens	1,204	36,120
Nevada	3,657	109,710
Bradley	107	3,210
Total November	96,892	2,906,760
Total October	100,555	3,117,300
Difference	3,663	100,540

GULF COAST

Daily Average and Monthly Production in November.

Boling	2,243	67,290
Batson	1,263	37,890
Blue Ridge	4,331	129,930
Barber Hill	877	26,310
Big Creek	3,067	92,010
Damon Mound	793	23,790
Dayton	394	11,820
Edgerly (La.)	2,121	63,630
Goose Creek	7,817	234,510
Humble	4,323	129,690
Hull	14,947	448,410
High Island	31	930
Jennings (La.)	1,301	39,030
Lockport (La.)	5,365	160,950
Markham	257	7,710
Nash	1,571	47,130
Orange	4,415	132,450
Orchard	81	2,430
Pierce Junction	11,122	333,660
Piedras Pintas	99	2,970
Spindletop	50,747	1,522,410
Saratoga	1,079	32,370
Sour Lake	4,000	120,000
Sulphur	575	17,250
South Liberty	2,042	61,260
Vinton (La.)	4,945	148,350
West Columbia	8,691	260,730
Welsh-Anse La Bute (La)	26	780
Starks, La.	382	11,460
*Miscellaneous, La.	310	9,300
Total November	139,215	4,176,450
Total October	141,272	4,379,432
Difference	2,057	202,982

SOUTHWEST TEXAS

Daily Average and Monthly Production in November.

Field—	Av. Daily	Monthly
Luling	15,274	458,220
*Mirando	9,210	276,300
Somerset	2,342	70,260
Callaham	24	720
Rockdale-Minerva	383	11,490
Lockhart	1,710	51,300
Total November	28,943	868,290
Total October	29,782	923,242
Difference	839	54,952

*Includes Webb, Jim Hogg and Zapata Counties.

GASOLINE MINOR FACTOR IN AIRPLANE OPERATION

The cost of gasoline and lubricating oil represents about one-fifth of the total cost of air travel, according to a detailed analysis of costs compiled by the Department of Commerce. The total cost has been figured at 35.28 cents per mile, 5.0 cents of which is taken up by the cost of gasoline and oil.

These figures are arrived at by the department, based on the use of single engine planes valued at from $12,000 to $14,000 each. Figures compiled by various companies range from the lowest of 35 cents a mile up to $1 a mile for single-engine ships and from $1 to $1.50 a mile for multi-engine ships.

The 35 cents a mile figure, furnished by one company, is arrived at as follows:

	Cents per Mile
Pilot	7.5
Mechanic	2.3
Fields (2)	2.6
Depreciation	8.6
Fuel and oil	5.0
Hangar expense	0.6
Hangar land rent	0.12
Office	4.83
Advertising, selling	2.41
Legal	0.24
Insurance	....
Pilot	0.60
Plane	0.48
Total	35.28

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for November

Runs

	Month	Dy. Av.
*Prairie Pipe Line Co.	4,470,000	149,000
Gulf Pipe Line Co.	1,620,453	54,015
Texas Pipe Line Co.	1,314,796	43,826
Empire Pipe Line Co.	1,344,761	44,825
Magnolia Pipe Line Co.	2,045,554	68,185
Cosden Pipe Line Co.	1,059,003	35,300
Sinclair Pipe Line Co.	2,752,710	91,757
Oklahoma Pipe Line Co.	3,871,727	129,057
*Other lines	7,918,273	263,943
Total November	26,397,277	879,908
Total October	27,729,663	894,506
Difference	1,332,386	14,598

Shipments

*Prairie Pipe Line Co.	5,460,059	182,002
Gulf Pipe Line Co.	1,367,498	45,583
Texas Pipe Line Co.	974,190	32,473
Empire Pipe Line Co.	1,250,114	41,670
Magnolia Pipe Line Co.	1,837,349	61,245
Cosden Pipe Line Co.	867,939	28,931
†Sinclair Pipe Line Co.	2,938,888	97,963
Oklahoma Pipe Line Co.	3,629,478	120,982
*Other lines	7,590,522	253,018
Total November	25,916,037	863,867
Total October	26,128,011	842,838
Difference	211,974	21,029

Stocks

*Prairie Oil & Gas Co.	31,700,000
*Prairie Pipe Line Co.	2,500,000
Gulf Pipe Line & Gypsy Oil Co.	10,126,654
The Texas Company	5,513,789
Empire Pipe Line Co.	4,577,545
Cosden Pipe Line Co.	3,447,632
*Sinclair Crude Oil Pur. Co.	20,550,000
Magnolia Petroleum Co.	6,946,641
Oklahoma Pipe Line Co.	2,970,487
Carter Oil Co.	15,959,813
*Other lines	10,560,000
Total November	114,952,561
Total October	111,418,650
Difference	3,433,911

*Estimated. †Prairie shipments include Texas crude oil and Sinclair shipments include Texas and Wyoming crude oil.

Note: Stocks do not include approximately 5,200,000 bbls. of crude oil held in storage on private tank farms and leases and 2,000,000 bbls. of Texas Panhandle crude oil in storage in Oklahoma and Kansas.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November.

	Oct. '27	Nov. '27
Buckeye P L		
Nat. Transit	153,605.94	138,601.66
S W Pa P L	82,744.33	85,325.67
Eureka P L	385,550.68	364,643.37
(Macksb'g)	317,058.69	314,900.41
Buckeye P L (Cleve)	10,997.15	12,030.90
Buckeye P L (Lima, etc)	125,719.20	105,956.52
Indiana P L	8,595.58	7,189.17
Cum'land P L	243,106.02	236,613.60
N Y Transit	23,121.86	21,173.39
Tidewater P L	189,161.94	182,622.58
Pure Oil	161,298.70	152,816.95
Emery P L	55,417.68	56,468.37
Paragon Dev.	26,098.63	27,069.78
Stoll Oil Ref.	.....	12,843.77
Total	1,782,476.45	1,718,256.14
Daily Avg.	57,499.24	57,275.20

Note—Indian Refining Co. also reported other receipts of 341,754.30 bbls. Paragon Refining Co. had other receipts of 167,197.21 bbls. Paragon Development had other receipts of 1,496.95 bbls. Pure Oil had other receipts of 10,281.87 bbls.

Petroleum Deliveries

The following tables exhibit the shipments of regular deliveries of various pipe lines in New York, Pennsylvania and Indiana for October and November.

	Oct. '27	Nov. '27
Nat. Transit	412,898.65	319,056.21
S W Pa P L	396,020.73	375,867.86
Eureka P L	181,662.67	192,438.78
Buckeye P L (Macksb'g)	174,666.60	152,463.55
Buckeye P L (Cleve)	879.27	969.42
Buckeye P L (Lima, etc.)	904,624.25	1,013,132.41
Indiana P L	914,394.35	1,116,002.96
Cum'land P L	148,084.83	145,443.98
N Y Transit	263,563.56	175,265.57
Northern P L	190,733.21	178,350.74
Tidewater P L	157,676.88	111,596.80
Pure Oil	185,726.82	177,134.58
Emery P L	56,581.89	54,750.52
Paragon Ref.	165,392.67	168,246.24
Indian Ref	379,151.78	319,181.35
Paragon Dev.	25,962.84	29,362.95
Total	4,558,028.00	4,529,263.92
Daily Avg.	147,036.39	150,975.46

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of October and November.

	Oct. '28	Nov. '27
Nat. Tran.	1,075,415.42	1,108,601.66
S W Pa P L	690,515.74	715,534.91
Eureka P L	1,712,937.61	1,729,737.61
Buckeye P L (Macksb'g)	393,929.95	396,287.92
Buckeye P L (Cleve)	54,908.39	50,691.02
Buckeye P L (Lima, etc.)	4,863,379.96	4,695,838.16
Indiana P L	666,852.50	647,290.51
Cum'land P L	921,345.31	894,822.46
Southern P L	441,618.38	386,756.90
N Y Transit	436,043.71	510,190.02
Northern P L	541,552.22	547,199.31
Pure Oil	410,038.20	390,386.96
Emery P L	11,001.49	12,543.82
Paragon Ref	13,919.16	13,179.46
Indian Ref.	106,017.05	129,403.33
Paragon Dev.	8,185.35	7,276.88
Total	12,047,660.64	11,939,740.93
Increase	165,055.79	.....
Decrease	.....	107,919.71

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern pipe lines at the close of October and November showing the gross stocks of the above fields:

	Oct. '27	Nov. '27
Pennsylvania	4,160,309.06	4,076,710.10
Lima	1,149,122.63	1,177,864.75
Kentucky	1,065,864.24	1,089,857.44
Mid. Cont.	5,576,783.90	5,519,125.98
Illinois	95,580.81	76,182.66
Total	12,047,660.64	11,939,740.93

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1924	1925	1926	1927
Jan.	62,638	56,831	55,630	56,209
Feb.	68,023	60,606	60,394	61,298
March	68,721	60,575	61,644	63,247
April	71,068	63,062	63,019	60,337
May	63,942	59,217	60,551	60,284
June	63,239	61,270	64,131	62,757
July	64,208	62,639	63,206	58,574
Aug.	59,942	59,686	61,815	60,570
Sept.	62,930	62,510	64,639	60,285
Oct.	64,976	60,995	62,704	57,499
Nov.	56,282	59,350	61,774	57,275
Dec.	55,814	57,974	58,775	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1924	1925	1926	1927
Jan.	145,518	157,889	156,956	141,227
Feb.	148,732	160,863	159,488	138,534
March	147,098	154,591	150,239	133,777
April	147,614	151,429	152,371	149,220
May	134,997	146,905	150,903	144,344
June	143,010	149,467	160,257	149,772
July	124,187	161,338	160,275	151,350
Aug.	123,120	161,730	151,929	138,658
Sept.	127,325	156,719	158,915	144,213
Oct.	123,170	145,388	161,132	147,036
Nov.	124,400	143,582	152,668	150,975
Dec.	151,392	159,162	136,428	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1925	1926	1927
Jan.	11,353,276	9,859,170	9,718,062
Feb.	11,192,924	9,579,354	10,119,162
March	11,158,297	9,438,292	10,794,044
April	11,062,082	9,805,851	11,112,296
May	11,207,562	9,531,757	11,359,381
June	11,093,796	9,585,904	11,493,672
July	11,067,453	9,734,687	11,453,128
Aug.	10,974,481	9,118,947	11,989,115
Sept.	10,781,753	9,433,732	12,212,716
Oct.	11,086,850	9,269,806	12,047,661
Nov.	11,068,158	9,257,667	11,939,740
Dec.	10,458,445	9,454,512	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above.

1926—	Runs	Shipments	Stocks
Nov.	2,810.60	1,664.55	15,817.31
Dec.	2,847.52	5,561.11	13,103.72
1927—			
Jan.	2,641.54	1,470.42	14,274.84
Feb.	2,764.30	1,082.82	15,956.32
March	2,587.20	1,878.56	16,664.96
April	2,834.23	1,512.65	17,986.54
May	2,768.43	539.29	20,215.72
June	2,946.29	664.40	22,497.61
July	3,153.39	1,271.61	24,379.39
Aug.	3,057.89	8,713.11	18,719.17
Sept.	3,309.56	2,656.48	19,372.25
Oct	2,801.32	1,226.99	20,946.58
Nov.	2,746.50	2,220.53	21,472.55

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, December 1	2,107,943.25
Other receipts	577,687.68
Runs from wells	291,284.20
Regular deliveries	354,406.56
Other deliveries	474,876.27

The amount of Illinois oil run by the Tidewater Pipe Co. in November was 27,-953.46 bbls. and deliveries were 60,778.50 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1926—	Runs	Deliveries
November	651,263.33	498,438.37
December	668,909.58	587,947.61
1927—		
January	621,421.03	530,085.98
February	595,831.16	476,950.71
March	727,593.91	554,947.43
April	593,225.97	444,818.49
May	728,759.40	543,192.02
June	640,975.85	532,217.78
July	613,901.30	484,902.53
August	651,276.40	529,331.37
September	619,589.49	433,212.49
October	601,099.25	408,287.58
November	605,621.14	415,185.06

Tidewater Pipe Co., Ltd., also delivered in November 263,645.39 bbls. of Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
July	13,484	27,290	33,065	9,129	5,451	78,419	.....	.....	.....	.....	968	79,387
August	18,516	3,065	48,129	17,323	26,000	113,032	.....	.....	.....	.....	.....	113,032
September	23,033	6,967	51,400	14,567	19,523	115,500	.....	.....	.....	.....	.....	115,500
October	20,936	4,355	47,968	14,129	14,387	101,774	.....	.....	.....	.....	.....	101,774
November	9,433	2,833	25,033	15,166	4,933	55,400	.....	.....	.....	.....	.....	55,400

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
July	22,226	10,387	80,193	7,193	38,710	158,710	3,226	25,065	806	.....	29,096	187,806
August	19,323	9,032	80,903	14,258	31,821	155,387	2,097	21,161	.....	.....	23,258	178,645
September	28,033	11,433	85,500	12,800	37,700	175,467	5,667	19,233	.....	3,600	28,500	203,967
October	29,064	13,097	79,355	3,838	34,097	156,451	1,613	19,223	806	1,871	23,612	180,064
November	35,233	8,033	84,533	30,100	27,067	184,967	4,000	26,500	2,000	1,667	34,167	219,133

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
1926—										
December:	Month	20,276,950	17,882,908	19,753,591	3,654,156	4,266,189	2,018,734	2,658,301	3,313,000	73,823,829
	Daily average	654,095	576,868	637,212	117,876	137,619	65,120	85,752	106,871	2,381,414
1927—										
January:	Month	20,184,872	19,035,426	18,605,363	3,769,879	4,076,469	1,905,570	2,620,363	3,332,500	73,530,382
	Daily average	651,125	614,046	600,173	121,609	131,499	61,470	84,203	107,500	2,371,948
February:	Month	17,982,711	19,752,348	16,483,712	3,352,076	3,574,256	1,784,104	2,385,135	3,007,200	68,321,542
	Daily average	642,240	705,441	588,704	119,717	127,652	63,718	85,183	107,400	2,440,057
March:	Month	19,835,724	22,480,921	18,232,617	3,675,143	3,853,920	2,032,982	2,476,798	3,335,800	75,923,905
	Daily average	639,862	725,191	588,149	118,553	124,320	65,580	79,574	105,100	2,448,158
April:	Month	19,403,825	22,208,130	17,801,140	3,516,930	3,378,240	1,994,320	2,615,770	3,474,000	74,482,365
	Daily average	646,870	740,271	593,371	117,231	112,608	66,491	87,193	115,800	2,482,745
May:	Month	19,506,054	25,258,463	19,539,083	3,704,314	3,493,669	1,935,175	2,742,588	3,467,000	77,646,346
	Daily average	629,238	750,273	630,293	119,494	112,699	62,425	88,471	111,839	2,504,721
June:	Month	19,181,442	22,830,330	18,299,810	3,437,580	3,365,760	1,880,820	2,592,437	3,330,000	75,018,179
	Daily average	639,381	761,011	613,327	114,586	112,192	62,694	86,414	111,000	2,500,606
July:	Month	19,319,021	26,522,546	17,607,194	3,454,082	3,406,683	2,279,405	2,635,607	3,373,000	78,597,538
	Daily average	623,194	855,566	567,974	111,422	109,893	73,529	85,020	108,806	2,535,401
August:	Month	19,279,131	26,283,350	17,715,229	3,424,570	3,242,690	2,100,905	2,530,065	3,508,400	78,283,250
	Daily average	621,907	847,850	571,459	110,470	104,600	70,964	81,615	116,400	2,525,266
September:	Month	19,064,500	24,111,660	18,322,800	3,342,240	3,032,970	2,027,070	2,238,609	3,465,000	75,604,849
	Daily average	635,483	803,722	610,760	111,408	101,099	67,569	74,620	115,500	2,516,828
October:	Month	19,448,893	24,223,803	19,203,136	3,509,169	3,117,300	2,056,159	2,270,905	3,565,000	77,394,365
	Daily average	627,384	781,413	619,456	113,199	100,555	66,339	73,255	115,000	2,496,601
November:	Month	18,516,467	23,083,380	18,636,390	3,312,870	2,906,760	1,947,660	2,274,870	3,330,000	74,008,397
	Daily average	617,216	769,446	621,213	110,429	96,892	64,922	75,829	111,000	2,466,947
	Total 12 months	232,089,590	271,673,865	220,300,045	42,153,009	41,714,816	24,061,914	30,041,288	40,600,500	902,635,027
	Daily average	635,862	744,312	603,618	114,488	114,287	65,923	85,045	111,234	2,473,978

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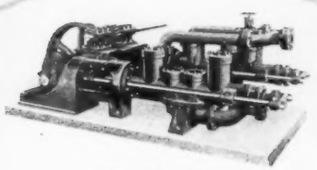

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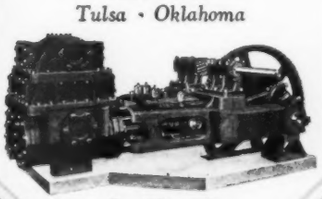

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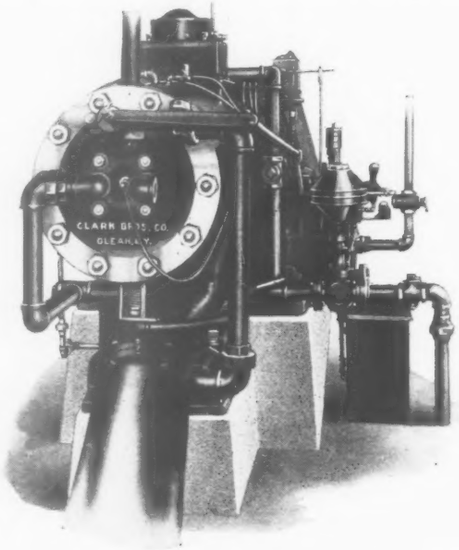

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